hard core

THE JOURNAL OF THE BRITISH APPLE SYSTEMS USER GROUP

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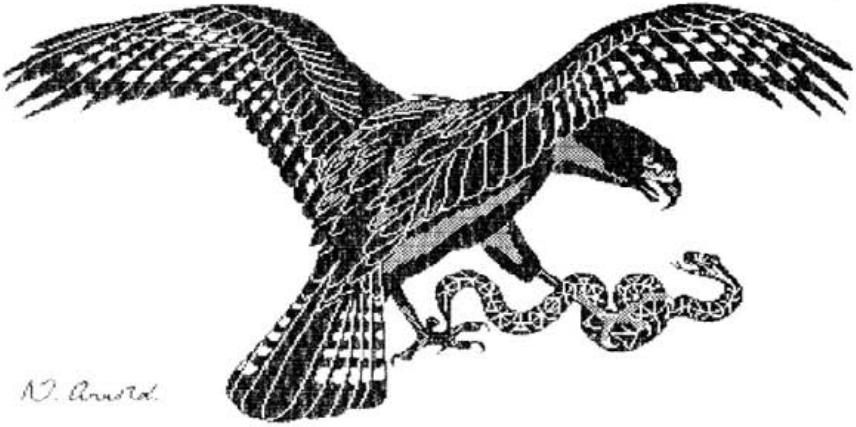

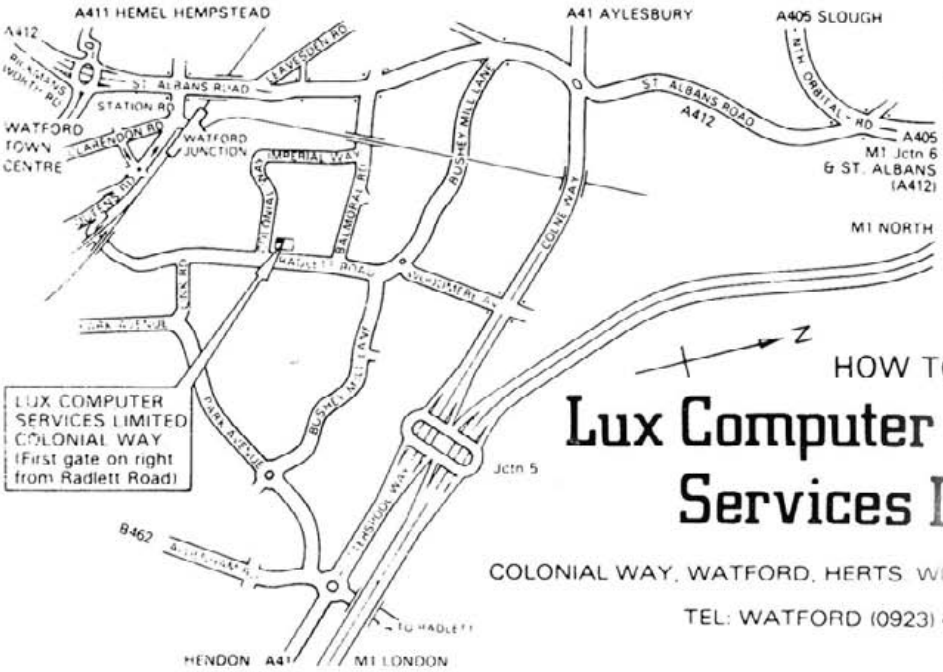

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CONTENTS

4 Editorial
Chairman's Corner
5 Apple & ITT 2020 Mike Siggins
8 ITT Tramlines Mod
Exec Tip Martin Rogers
9 Communications Software Review
Quentin Reidford
16 Book Reviews
22 Education Norah Arnold
23 Competition Results
24 Exhibitions
Lonely Apples
26 Apple //e Super Hi-Res
Peter Trinder
31 Vision-80 Review Dougal Hendry
34 Local Groups
35 The Other Woman Cynthia Reidford
38 Beneath Apple DOS Update
Ray Harris
39 Videx Enhancer Review Peter Blair
41 Software Library Roger Mather
42 Pecks, Pokes & Calls
Dick Menhinick
44 CIA Review John Rodger
47 Readers' Letters
51 Diary

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Front Cover by Norah Arnold: The idea for the cover picture came from an early 18th century engraving in a Dover book of copyright free illustrations. The picture was drawn on squared paper and then converted to hex data which could then be printed by an Epson FX80 in bit-image mode.

Editorial

Many thanks to all those who offered to review books. I had a marvellous response to my request for reviewers, but if you meant to offer and didn't get round to it, you can still have a go. Just ring me on [illegible].

If your article or letter to Hardcore didn't make it into this issue, don't fret. We had so much copy that some had to be held over until the next issue. I apologise if yours was one of these. Please don't stop sending things in. This issue, although not as big as our "bumper" Christmas one, is still bigger than usual. It would be great to always produce more.

FOR LISA USERS

Signal is a free newsletter produced by the Semaphore Corporation for users of Apple's Lisa. Its entire format is created using only the Lisa. Subscriptions are free to users who submit the serial numbers of their Lisas. Other readers can subscribe to Signal for $10 for 10 issues; $20 outside of North America. Contact: Signal, 207 Granada Dr., Aptos, CA 95003, U.S.A.

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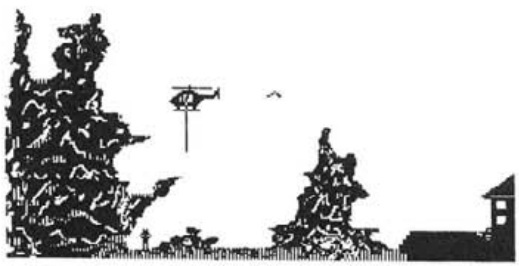

Chairman's Corner

This should be an interesting year for Apple Users. By the time you read this, you will have seen Macintosh, due to be announced to the world on January 24th. This will complete the set.

Apple's philosophy is to work on two families, the 6502 family of //e and ///, and the 68000 family of Mac and Lisa. Prodos will allow I's and ///'s to work in more harmony, and the dropping of the Twiggy drives in Lisa in favour of Mac's 3.5" Sony drives will unify the 68000 family. The Mouse // for the 6502 family shown at the recent Which Computer show means that all the Apple micros can use the same end user interface. Obviously it will take time for existing software to be modified to use the pull-down menus and the mouse.

So the die is cast for a crucial battle with IBM. In the USA and increasingly in the UK, Apple has been up against it. The Sales pitch for Mac has been set directly against the IBM PC, and by the end of the year we will know whether Apple has stopped the rot.

This will be important for existing users as Apple has continued its policy of development for the older models. I am sometimes asked the reason that I bought my I. My answer is that I did not want to be left behind by developments in the micro world, and I have not. My Apple still does all that I want it to (most of the time). The same cannot be said of all the micros around 3 years ago. The existing Apple user base is now so large that it is still profitable for Apple to push on with developments whilst the Taiwanese and Japanese look after older enhancements.

Many BASUG members have asked 'are these rip-offs worth buying?'. If you have any experiences, let us know.

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WHEN IS AN APPLE NOT AN APPLE? WHEN IT'S AN ITT 2020

APPLE - ITT 2020 COMPATIBILITY

by Mike Siggins

Soon after purchasing an ITT 2020, the new owner finds that there are quite a few 'features' that prevent the machine being 100% Apple compatible. This article is intended to show how that situation can be improved and is based on some two years of suffering. However, I ended up with what could be termed an ITT-Apple and hope the suggestions are of use. My weak point is hardware but I think the reasons quoted below are fairly accurate - certainly the cures suggested work as they have all been implemented on my system. The problems can be broken down into several areas:

1) HARDWARE.

The ITT is so similar to the Apple that for most purposes the 'plain vanilla' machine will cause no problems. Certainly a cassette system will only have different resident basic so the languages section is the only one to apply. It is when various add-ons and cards are considered that the differences arise.

The rule here is to try anything you consider buying at a helpful dealers. This will show once and for all whether a given card etc. will work. Obviously, some faults will not show in the course of a limited test but it is usually a good grounding.

Many cards will work with no problems. Typical are printer cards, serial interfaces and most ramcards. Unusual devices known to work includes the Graphics Tablet, Versawriter (both of these have the graphics problems described later) and the Modem cards. Difficulties arise with the more unusual cards such as second processors and accelerators, which I believe is due to the slightly different timing of the ITT's system clock. The ITT runs slower than the Apple and as many of these cards, such as the Softcard, interface directly with the 6502, problems arise. The Softcard can be modified to run on the ITT with little modification and there are several firms offering this service. With the others, experimentation is in order.

The ITT refuses to work with most of the 80 column cards but does work with the Videx Videoterm, even under Pascal. It may well be worth experimenting with the newer cards as my experience is limited to the 'first generation'. Logically, the Ultraterm should work but there is no guarantee of this.

Salvation may be at hand in the form of Pete & Pam Computers who at the time of writing have at least a prototype board which will convert an ITT to the correct timing of the Apple. This would solve a great number of problems with cards and does allow the accelerator board to work.

The other main query with the ITT concerns the disk drives. My system and most others as far as I can remember have come equipped with a special ITT controller and ITT disk drive, usually running DOS 3.2, which is a different design to the Apple standard. The card will not run DOS 3.3 and certain chips are of the wrong size for conversion by the Apple package. This normally means staying under DOS 3.2 which is now fairly primitive or upgrading the whole card to the Apple controller. This is not the answer for all cases however. Some ITT drives will not support DOS 3.3. On many, it is a case of adjusting the timing but on others a hardware mod is needed - often a very expensive task. The solution is again to visit your helpful Apple dealer and try out your drives under 3.3. I did this and was lucky enough to run 3.3 straightaway. As a precaution though, my second drive was Apple produced which doesn't look too good but I had no problems on the reliability side.

The ITT also has many quirky differences which make it a constant source of annoyance when buying the simplest add-ons. For instance, if one were to buy the Robocom Bitstik, the ITT would need several mods before it could be used. There are also problems with lower case chips as the ITT seems to have a keyboard that conforms to no known Apple revision. There are lower case chips that will work but again experimentation is required. The Bitstik problems are dealt with in the graphics section.

2) LANGUAGES.

When the ITT was designed, the engineers found it necessary to amend Applesoft slightly to correct some bugs and also to cater for the increased resolution of the

ITT's hi-res screen. The resulting language is known as Palsoft and is very slightly different from the original but causes a disproportionate number of problems.

For a start, any programs with a built-in 'on error' fix will crash the ITT as the bug has been removed (see manuals). Secondly, nearly all the programs the serious user will use are written in Applesoft and consequently fail to use the hi-res benefits or alternatively tend to crash when they do a call to the Palsoft ROMs which, of course, have certain routines in different areas. This means either wholesale editing of the Applesoft version or the preferred course of forgetting Palsoft altogether and opting for Applesoft.

This can be effected in two ways. The easiest is to purchase a 16k ramcard and use this to hold Applesoft in the read-only mode. This effectively gives a 48k machine with only Applesoft resident. It also enables one to use Integer and of course Pascal, Fortran, etc. but it is a wasteful way to use a ramcard. The other way is to replace the basic ROMs F0 and D0 permanently with the Applesoft equivalents. You should be able to buy these from an Apple dealer for about £12 each. If this step is taken, you are one major step toward an ITT-Apple. The advantage of this cannot be stressed too highly but it is a rather final option, although Palsoft can still be soft loaded if required.

The ITT comes supplied with either Integer or Palsoft in ROM, depending on its age. If Integer is the boot-up language, you are to an extent better off than those with Palsoft. This is because with a 16k ramcard, either Applesoft or Palsoft can be soft loaded into the card as the second language. This gives one more flexibility when running programs originally written for the Apple, rather than pure ITT programs which are almost as rare as rocking horse droppings. Even here though, the option of switching ROMs is to be strongly encouraged. Integer basic seems to be identical on the two machines but again the hi-res routines in the Programmer's Aid cause problems.

Pascal and the UCSD system run fine with only a couple of hitches. First, there are problems with upper and lower case input but this has been solved in a recent Hardcore. The second problem is also keyboard related and concerns the left and right square brackets. The Apple manuals show how these can be obtained using the shift key but on the ITT, both shift and control are required. The other problem concerns graphics and will be dealt with in the relevant section.

The many programs to move DOS to the language card all work without problems but of course this means that the ROM based language must be used. Overall, DOS is exactly the same as on the Apple and is one of the few areas of total compatibility.

3) GRAPHICS.

So at last we come to the bane of the ITT user. How many of us were tempted by that whopping resolution which left even the much vaunted Apple way behind? I was for one. The realisation soon dawns that although the resolution may be higher, that doesn't take account of i) ease of programming, or ii) that ITT users are a tiny minority in the Apple world and everyone writes for the Apple. Hence we get squashed circles, funny looking text, etc. etc.

The problems are aggravated by the famous ITT 'bars'. These are present whenever Applesoft is resident as it fails to address all the screen and the same is true of machine language games etc. See the article by Ken Gordon in Hardcore vol.1 no.6 for more information. If anyone hasn't seen them, they have the knack of either obscuring the graphics or providing contrasting colours on the ITT screen which all goes to make an unholy mess.

These facts soon mean that the higher resolution and effectively the colour just have to go in deference to the almighty Apple][. One then troops out to spend £30 on Jailbreak and wonders why one didn't buy an Apple in the first place. Unfortunately, this is the area in which you do need to swallow your pride and opt for a black & white Apple, there being no real alternative.

Unless you are going to write all your own graphics software or can stand the dire mess caused by those 'bars' then you are condemned to buy either the Jailbreak mod or carry out the well publicised 'two-chip' mod (originally in Hardcore vol.1 no.4 by David Bolton. See 'tramlines' article in this issue). The latter is acceptable if you don't need to keep switching back and forth but for ease of use, the Jailbreak is the only course of action. Even this grossly overpriced triumph of modern technology is

far from perfect. Yes, it clears the bars but also turns any coloured area into a 'mowed lawn' effect which is ghastly on colour but acceptable on monochrome. It does allow one to switch between ITT and Apple mode with ease however.

With Pascal, the Turtlegraphics unit also fails to address the gaps and means either colour graphics with bars or again, Jailbreak to the rescue. There is fortunately another option here. ITT managed to rewrite enough of the Pascal routines to provide colour and 360 dot resolution on the ITT by use of a special APPLE1 boot disk. This is available through BASUG and is very useful. No catches you ask? Well, yes. Possibly ITT didn't have such good programmers as Apple or it could be a hardware complication but the upshot is that the ITT routines run at about 60% speed. Oh well.

The above comments also apply to other packages such as LOGO where you always have the bars v. black & white trade-off. In the end, one just gets used to black & white graphics which makes one just very slightly envious at the sight of someone at a meeting showing off 108 colours on a RGB monitor.

The problems mentioned in the above sections combine to cause the potential user of the Bitstik real expense. The Bitstik system, while excellent, has been designed to get the absolute maximum performance from what is an ageing computer. Consequently, the tolerances are very fine. The problem for the ITT user is caused by having a completely different set of tolerances.

To use the Bitstik, for it is possible, several requirements must be met.

i) A 16k ramcard must be fitted in addition to the basic ROM change. This is because Bitstik needs 64k as well as resident Applesoft.

ii) Jailbreak is a necessity but again the colour fills etc. will be in black & white.

iii) The ITT does not recognise the third button on the Bitstik as this is used as a hi-res graphics location in the ITT. A hardware mod will be needed to provide this third input source.

The hardware mod is as follows and has the effect of providing the third switch line on the ITT. The mod is backed by the usual disclaimers and in the words of Blue Peter, get an adult to do it if you aren't sure!

Connect pin 1 (one) on the 74LS251 at H14 to pin 4 on the I/O socket. NB. the pin on the IC (H14) must be bent out of its socket so it is ONLY connected to the games I/O.

iv) The drives must be upgraded to DOS 3.3.

4) PROGRAM COMPATIBILITY.

When I first got my ITT the type of question that I drove several people mad with was, "Will Visipacman work on my ITT?" I felt so worried about compatibility that I bought no software unless I could see it working on my machine first. The worries were at the time well founded. I had a DOS 3.2 disk with a Palsoft 48k ITT. I now know that had I bought many programs, many would not have worked. All this was solved by experience however and eventually, in two years of use, I only came across one program that wouldn't work.

As a guideline, just about all machine code programs will work unmodified. They will of course still cause problems with graphics but they will run. Visicalc, all arcade games, bit copiers, most utilities, the many 3-D graphics programs, etc. all work fine as they boot into the ITT and use only the 6502 which is an identical environment to the Apple. This is really the first piece of good news in that most of the better programs are in assembler and can therefore be run on the ITT. It is still a good idea to use the following suggestion as a safeguard.

More problems are caused by programs written wholly or partly in Applesoft. For these the easiest solution is to prepare an 'Apple Emulator Boot Disk'. This is invaluable as a means of converting an ITT to look like an Apple as far as most commercial programs are concerned. The disk contains a modified Hello program which checks the resident language. If it isn't Applesoft, this is loaded in the form of the FPBASIC file from the master disk, preferably using one of the new fast dos programs for speed. It is stored in the ramcard and write protected and read enabled. One can then load in say PLE or whatever leaving the Apple Emulator ready to go.

You may find it helpful to know which language is active at any point so I usually assign a PLE macro with ?PEEK(62447)<return>. If the result is 0 then Palsoft is active, otherwise you are in Applesoft.

There are unfortunately some programs which

cleverly look at the ROMs in the ITT and decide that they are floating point basic and then proceed to shut off the language card or employ other nasty protection techniques. This means that at some time during the running of the program, everything will stop when Palsoft fails to deliver the goods. Typical of this breed is Visiplot, and the only answer is to have either Integer or Applesoft in ROM.

Other programs are even more fussy and require extensive coaxing for them to work. TASC is a prime example. TASC will only work in a 'clean' machine and a fresh power up is recommended for this and other compilers. I think all compilers need Applesoft resident both during compilation and at run time. This is true of all the compilers I have used including TASC, Expediter and Speedstar. Some programs are sold in compiled form and these just crash under Palsoft but run sweetly with the emulator. The only drawback here is that the ramcard is in use for Applesoft whereas it could be used for storing DOS thereby making available more memory for large compiled programs. This is perhaps the strongest argument in favour of a ROM switch.

The number of programs that will not run on the ITT configured as above is very small. However, if the one program you absolutely need doesn't work it can be very disappointing. Try all the above but always ask fellow users who may have found a solution.

Users of CP/M have none of these problems and given a modified Z-80 card, it should be plain sailing. This is also true of programs designed to run under MS-DOS, Flex, etc.

CONCLUSION.

The ITT can certainly cause a lot of worry for its owners but the overall solution is to find a helpful dealer, chat to other ITT users who may well have experienced the same problems or alternatively, write in to BASUG who helped me a great deal in those early days. Despite all these hitches, the ITT still provides a cheap realistic alternative to run the bulk of Apple software. If you search the second hand columns some real bargains can be found. Eventually you'll find that your own knowledge will tell you what will and what won't work on the ITT. Roll on the BASUG ITT Hotline?

ITT Tramlines Mod

As ITT users will be aware, there are often 'Tramlines' in Apple Hi-res programs. This modification should suppress these.

First, take off the outer casing of the 2020 by removing the screws in the baseplate. Then look beneath the keyboard and find chips B1 (74LS257) and A6 (74LS166). These should be taken out or, if you want to be able to reverse the process, get replacement chips. Follow the diagram, bending legs where necessary and connecting legs as shown. Leg 13 of B1 and leg 2 of A6 will no longer be located in the chip holder when the chips are replaced, but leg 3 of A6 will be. Place the modified chips back in their holders.

The result is a continuation of the colour adjacent to the 'tramline' through the 'tramline', effectively colouring in the space.

Chip located at B1 Chip located at A6

Exec Tip

Martin Rogers

In my previous article, BE AN APPLE EXECUTIVE, I promised you more applications for the EXEC command. Here is a useful (and short!) patch which will Initialise disks with no DOS image leaving tracks 1 and 2 available for storage of programs and files. This is particularly useful for data disks which will never be used to boot the system. Just save the following code in a Text file called DOSLESS INIT and EXEC it when you want to create a DOSless disk.

```
CALL-151
B74A:60 EA EA
AEB3:04
3D0G
HOME:VTAB5:HTAB12:?"< No-DOS-Init >":
VTAB12:?"Init will now Initialise a DOS'less
disk":?:?"Re-boot to INIT normal disks!!!":
VTAB23:HTAB11:?" An M.C.R. Utility"
```

Watch this space for more exciting utilities! Even better, write in with any that you have developed which you would like to share with BASUG members.

Communications

COMMUNICATIONS SOFTWARE REVIEWS

By Quentin Reidford

In the hope that Father Christmas will deliver the goods in the shape of Modem/ serial cards to some of you this year, I thought it would be appropriate to give you an idea of the more common communications packages around for the Apple. I am afraid that although I have tried them all on a I+, I have only tried one package on a IIe (ASCII PROFESSIONAL), and that worked perfectly, so I can only surmise that the others will probably work perfectly, but you will have to check with the vendor to make sure.

The communications packages reviewed are:
ASCII EXPRESS (STANDARD)
ASCII EXPRESS (THE PROFESSIONAL)
VISITERM
DATA CAPTURE 4.0
AMTECH VIDEOTEX ADAPT

1. ASCII EXPRESS (Standard)

Price:	£54.95
Format:	Apple DOS 3.3 disk. Copy protected
Serial Cards: supported	Apple Comms. card CCS Asynchronous SSM-AIO card

*NOTE: All the reviewed packages support the HAYES MICROMODEM which is of no use unless you wish to restrict calls to the States or to someone else who uses the Hayes modem.

The package comes in a shrink-wrapped parcel containing the disk and an A4 instruction manual. The manual is 40 pages long which I think is a good measure of either the friendliness of the program or its lack of facilities. In this case it reflects on the ease of use of the program.

The first operation to be carried out is to configure the program to your own system; this is done by pressing the space-bar twice during initial boot. Remember this is a protected disk and the the advice given is to configure the system disk, which makes me very nervous as the CONFIGURE program exists only on the master - tough luck if you want to change anything later on, especially as the instructions advise you to make the changes to the Master. PLEASE DON'T. Use the (C)opy option on booting and make a configureless copy to another disk first. You can then load configure from your master and write those changes back to your copy, perhaps complicated for first time users but better than closing your options first time around. The options given under configure are to change serial card/ modem type, select slots for them, printer slot no. and to select whether or not you have lower case display capabilities or not (sorry I don't know about IIe compatibility). However assuming all is well press Return and the disk is configured for your system.

When the disk stops whirring you will be presented with a menu which allows options to send or receive files, load and save files to disk, view or print the contents of the buffer. There are also dial facilities for Micromodem users, not for us!

Pressing B from this primary menu allows you to go straight to terminal mode, and turn on or off the incoming data buffer. This can be done while 'on-line' by using Ctrl 'E' to toggle on or off. If you have a printer hooked up the program will ask if you want data to be sent there. To return to the first menu page 'Esc' out of terminal mode.

There is a very nice line editor included in the package which allows you to edit files received or about to be sent. It uses 'Dot' commands, i.e. .G will Get a file from disk, CR at this point catalogs current disk, and prompts filename again. You can .I(nsert lines), .D(elete lines), .S(et margins) and .P(ut file to disk).

There is also a Macro facility available which will allow you to set up strings for example to Auto-Logon to bulletin boards, and if using an Auto-dialing modem (Hayes again) you could automatically set the software up to dial the bulletin board, log on, extract messages to you and log off, all without any effort from you, however I don't have Auto-dial so the only use I can put this facility to at the moment is to Log-on.

Included on the Master disk are utility programs which format Applesoft and Integer programs into text files ready for transmission, and a very nice utility for packing those files for shorter upload times. This is done by stripping all spaces from the files as EXEC will put them back for you when you have taken such a text file down into your system. There are also two programs for converting binary files into text files and you use whichever one will

not corrupt your binary program. However you must not crunch these files.

The Uploading (sending TO a remote computer) and Downloading (taking FROM a remote computer) is quite straightforward but does not appear to have any error checking facilities, so bad 'phone lines could result in some corruption. However this section is well prompted and easy to use.

For the price this is a good program, but does not support 80-column cards and is limited in serial cards supported. Unless you have a Micromodem, you probably will not be able to make use of Carrier Detect switch on. The program is quite friendly, crash proof and like all similar programs requires a little practice to get the hang of, particularly checking whether or not the printer/ buffer is on or off.

2. ASCII EXPRESS (The professional)

Price:	£99.00
Format:	Apple DOS -modified- NOT PROTECTED
Serial cards: supported	CCS 7710A SSM-AIO Apple Comms. card Prometheus Versacard Mountain Computer CPS Apple Super Serial card Intra PSIO card Apple /// serial port
80 column cards: supported	Virtually ALL cards including Omni-vision

This package comes with an impressive 200 page manual, which you are advised to read carefully. However, it feeds you enough information in the early stages to get you up and running before throwing you into the deep-end.

ASCII PRO. really is the Daddy of those programs reviewed, it seems to have everything, and because it CAN be complex I can really only skip through some of the more exotic facilities. On booting the master disk you enter the configuration mode, and at this point you have to reply whether or not you can display U/L case (this means when in terminal mode i.e. if using 80-col. card) then if you can display U/L now (IIe users note). You then have to (I)nstall your communications driver depending which serial card you are using - this is the only package I have used which supports the new Apple Super Serial card and the MH Multi-function card. Having done that you select (L)ocal for ensuring your 80-column card - if you have one - will work OK. This can be selected automatically by selecting option 0. The IIe 80 column board is found with this although set up for a II+. If you don't have 80 columns you can force 40 column or let the software sort it out for you! You can then select for particular printer configurations or insert your own driver, or again let the software do it for you automatically.

Other options at this stage allow you to set defaults on entering Terminal mode, Data word length, baud rate, duplex, printer on (teletype mode), buffer on etc. However you don't really need this to start off with. When you become proficient with the system you can use the program to act as a remote terminal which friends can access, and again from the install menu, you can select which drives they can access and define a password for them to get into your system. However, to get full benefit from this you would need an Auto-answer modem and a serial card capable of recognising that it was being called (Carrier Detect).

*NOTE: If you think you might like this facility sometime then DO NOT buy the Apple Comms card. It does not support carrier detect, and the program cuts that option out. Instead get an Apple super serial card or MH CPS card. They do support carrier detect.

If you now type (S) from the install menu the disk will whirr and you will be prompted to switch to terminal display mode (i.e. switch on 80-col. card if you have one). If you are configured to have carrier detect present all the time you will have to type Ctrl Q <Q> which displays one of the two option menus. If you are using a card/modem set-up which makes use of carrier detect, just press Q. From this menu you can, by pressing the appropriate key, turn on buffers (as supplied DOS is loaded on a Ram card giving 27+K buffer space, if no card 17+K available), auto-save buffer for overflows, turn on/off printer, catalog drive(s), load files, write files, enter the editor, fetch a macro, change baud rates, data word length etc. etc.

The editor included is similar to that of Standard ASCII EXPRESS, using DOT commands, but enhanced to work like Wordstar, i.e. <A>, <F> skips along words, .H at any time displays the editing help menu. One minor fault/glitch is that <V> insert on/off does not seem to toggle its status although the function works OK ... still, who's counting?

The macro function is similar to that in standard AE, and would be excellent if used with Auto-dial, but it can be used to minimise log-on times.

Uploading and Downloading are really quite spectacular as these options allow you to either send data as a straight ASCII text file, taking chances with corruption or to use a system of error checking using Christenson protocols. This system in effect sends data in 125 Byte blocks with a checksum at the end of each block. If for any reason the checksum doesn't tally then the program flags the sending computer to re-send that block, however if you get a total of 9 errors during the transmission the routine aborts. These transmissions take longer, but they almost guarantee perfect transfers. A 40 sector file will be split into 80 blocks to be transmitted and will take 6 or 7 minutes to complete. During the transfer your screen will display whether or not you are getting errors, and the current block being Read or Sent. Two Apples, both using AE Pro. can send each other Applesoft or Binary files without the need to convert them to ASCII text files. One Apple is set up to be the 'Remote' terminal and the other (G)ets the required file from it using (P)rotocol transfer. The program prompts with the type of file being sent e.g. 02 = Applesoft, and starts the transfer with full error checking. The program being transferred is saved on disk automatically under the same name and in the same format as the original on the remote terminal's disk. With this facility are the same Applesoft/Integer to text file utilities, space cruncher and binary conversion programs found on the standard package. There is also another file called CHFORM which will re-write your text file to configure it for either a Pascal or a CP/M environment, and vice-versa. This program will, for instance, add extra linefeeds after a carriage return when sending to a CP/M machine, because CP/M would otherwise strip off the one line-feed after CR giving one continuous line with no apparent carriage returns.

There is also the facility for the program to emulate several different terminals, IBM etc, but I admit to not having tried this out!

This package is very definitely my favourite of the group. It takes a bit of work to get into properly, but the options that it can cover are extremely wide. It can cope with most of the available peripheral cards, and is unique in this (as far as I know). It is crash proof - Reset just returns you to the terminal mode - and has no apparent bugs. The manual is not padded with waffle. You may in fact need to use all the information contained in it, and it is nicely tabbed for reference. The only item I would have liked to see is the facility to read a clock card, particularly in Remote mode.

By any measure I think this program is superb, it is crash-proof, easy to use and best of all can be adapted to suit almost any system configuration.

3. VISITERM

Price:	£69.00
Format:	DOS 3.3 - Protected
Serial cards:	Apple Comms. card
supported	CCS card
	Hayes modem

This package comes with the usual Visi-type padded book/manual of approximately 200 pages and of course the program disk. The program must really be at its most impressive when used with the Hayes modem - without this piece of equipment the only cards which are accepted are the Apple Comms. card and the CCS card. The presence of these cards is recognised by the software and the program adapts itself accordingly. When the manual is studied you will find that there is an awful lot of padding other than in the cover! There are many pages dedicated to the whys and wherefores of communications, all interesting stuff, but I think unnecessary in the program manual.

Another very large chunk of the manual is dedicated to explaining all about the fonts available when displaying text. This program is unique amongst those reviewed by using the Hi-res screen to display incoming text. It is possible, but not very legible, to have a 70 column screen display. Two fonts are available at any one time, and there are about eight fonts supplied on the disk, including APL characters!! While I quite like the idea of having almost an 80 column display available without the need to buy a card, I did find the 'floating' effect of the text on the screen a little disturbing, but considering that you have really bought a communications program I think that there is little need for font editors and the abundance of accompanying text.

When you boot the program you find yourself in terminal mode and have to type Ctrl ! to

leave that level and drop into the options menu. In this mode you will be able to change the important things like Baud rate, Data word length and ACK/ON ACK/OFF. These last symbols decide which keys you will use while in terminal mode to temporarily stop and start the remote computer, usually Ctrl A and Ctrl Q. In the options menu there are many functions which decide unnecessary things like scroll rate, double/triple spacing etc. From this menu you can enter the (F)iler menu, the (T)erminal mode or the (M)acro mode. The filer mode is used to transfer text files to and from a remote computer, and the package comes with the necessary programs to execute the conversion. The binary conversion of an 80 sector program took about 12 minutes to convert, and didn't work when the process was reversed, but to be fair that could well have been 'Pilot error'. This is also the mode which must be entered if you wish to save a transmission to disk for later printing.

There is NO buffer to capture incoming data, other than using the filer mode and writing straight to disk. The procedure for this whilst in terminal mode is ; Ctrl A (to stop remote computer) Ctrl ! (Shift 1), F, Return (assuming that you have previously set up a file name to save to) then finally Ctrl Q to tell the remote computer to resume sending - pretty clumsy I think and particularly poor when you try to download a program. If you capture more than you need you must read the captured text file with a word-processing program, say Applewriter II and edit out the stuff you do not require. There is no editor included in this program, again I think that is a minus point.

The macro function allows you to re-assign keys to print out text, for example, one key stroke will log you on to a remote system with responses and names. This is a nice feature although no better than the macro function on all the other programs, and considerably less powerful than the macro functions available under ASCII PRO. There is a utility on the disk which will format text files for printing with control over pagination etc. This is a useful utility, but not a life-saver.

All in all Visiterm is really not in the same ball-park as the others. It lacks some features such as a data capture buffer and teletype facility which the others have and which make them easy to use. I hesitate to suggest that too much attention has been paid to the frills of Hi-res text than the nitty gritty of a successful communications program, but that is how it seems to me.

4. DATA CAPTURE 4.0 (Videx)

Price:	£59.95 (For IIe version)
Format:	DOS 3.3 Unprotected
Serial cards: supported	SSM AIO card Apple comms. card Hayes modem

My report on this package will be less detailed as I only used it for two days on a borrowed 80 column card. However, the manual leads me to believe that the standard 40 column package is identical apart from, naturally, the screen display.

The package consists of a 24 page A4 booklet and an unprotected disk. The first thing you are advised to do is to make copies (for your own use!) of the program disk. This is because when you format the program to your machine requirements some of the files found on the master disk will be scrubbed. Having done this run 'hello' on the copy of the master disk. First time around this will be the configuration program, next time running 'hello' will run the main program. Configuration allows entry of details such as the type of Comms. card or modem in use, number of drives connected, printer slot, shift key mod. and initial Baud rate. Having ascertained that everything is OK you press <return> and the disk will be configured, ready to run the main program from future boots. You can of course make as many copies of your configured disk as you wish.

On running your configured disk you will be presented with a screen, empty apart from three status lines at the top, telling you number of drives, whether you are in Half or Full Duplex and if your data capture buffer is on or off. I think that is a nice touch, preventing the loss of data by having the buffer turned off by accident. Pressing the 'Esc' key will drop you into the Main Menu and from here you can set up various options. By single key strokes you can (C)atalog the disk, (L)ist text, (S)end text - to remote computer - (W)rite buffer to disk or (P)rint the buffer to printer. By pressing (T)oggle - (D)uplex you can swop between half and full duplex. The (T) prefix is also used to change drives, switch on/off buffer, change Baud rates and turn on or off (T)ransmit. Turning transmit off allows you to play with the program off-line. Pressing <Return> from this menu will put you back into the terminal mode.

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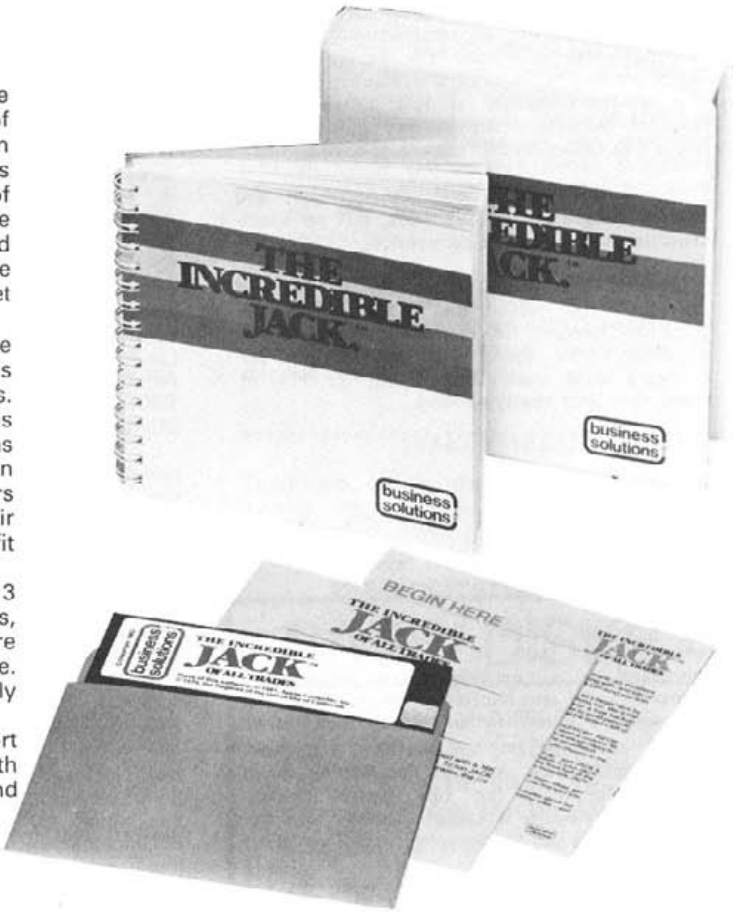

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System Requirements: Apple IIe/II+ with 64K, two disc drives and 80 col. card. Also available Jack II for the I.B.M.-P.C.

Using the List, Merge and Insert modes from the main menu gives you the facility of a line editor as the text in the buffer is given line numbers. The buffer can hold 500 lines of text (80 columns wide) or about 21K. If it fills up, the program sends the remote computer an instruction to stop sending while it writes the buffer to disk under the name OVERFLOW-1. Having done this the remote computer is told to send again until if necessary the buffer again fills up and a file called OVERFLOW-2 is saved.

There is a utility to convert Applesoft and Integer programs to text files, but no space cruncher and no Binary conversion.

Altogether this program is easy to use and provides you with the more important facilities needed for communications. I was surprised that there was no facility for changing data word length, but in 99% of cases this isn't really needed.

5. AMTECH VIDEOTEX ADAPT

Price:	£60.00
Format:	Apple Dos 3.3 disk. Copy protected.
Serial Cards: supported	Apple Super Serial Card Y2(Prism) Serial card

This program differs from all the others reviewed in that it has been primarily conceived as a communications package to access Prestel and Micronet. However, as you will see it does rather more than other Prestel software on the market: the most obvious difference is that the display is in colour, admittedly not full Prestel colour, but using STANDARD Apple colour without the need for RGB cards, monitors etc. This gives an attractive display which is fairly accurate but excludes yellow, giving instead a second green. The lettering is all white against a black background and the use of a chunky character set gives a legible display. Coloured lettering is not supported. The program was originally written to be used with the same company's Auto-dialing modem (of which more later) and therefore there is a user definable directory of telephone numbers for Prestel or other computers. On receiving the program the first operation is to set up the parameters (assuming you are using one of the supported serial cards) to log-on to Prestel automatically once you have manually dialed up the computer and received the answering tone. It should be added at this point that the program has only the very minimum in the way of a conventional manual, only a page of instructions to get you started. The working instructions are all included in extensive Help pages available on every level by pressing 'Esc'. This is a facility which I particularly appreciate as I find it easier to have help immediately on hand rather than searching through a written manual at the crucial time.

Having set up your log-on data you can now set up a directory of pages which you frequently access. This, as with the other directories, can be as lengthy or as short as you wish. Having done all this you now dial up Prestel, your access code is put in for you and flipping to the 'route-map' you go directly to the pages you want. These can either be saved to disk or dumped to a graphic printer. If line time is a consideration, and for most of us outside London it is, then save to disk for later recall. There is also the facility to hold the pages in memory, 'holding mode', for off-line recall.

Having sped around the pages you wanted you can now 'Hang-up' and use the program as a Prestel emulation, recalling pages from disk at will, printing them as required.

There you have it, an easy to use access program for Prestel, giving automatic log-on, page routing and page save facilities using standard Apple colours (6).

However, there is more to the package than that. Considering that the program also uses the Apple Super Serial card, the Authors have included a basic access program for 300 Baud services. This means that one program can allow you to access the most common communications systems in the UK. The 300 Baud software is basic - don't expect the sophistication of the other packages in this review - but at the same time it works. All you must have is a modem capable of 1200/75 AND 300/300 Baud rates (or use two modems!). This option is only available using the SSC.

A few words must now be said about the same company's Auto-dial modem. As it stands, it is used to make the Prestel option of the software very simple to use. Just pressing a key to select the number you wish to call is all you have to do to get straight into Prestel!

The modem is all on one card which sits in any slot inside the Apple. A cable connects directly to a telephone wall plug, and that's all. There is, of course, no

requirement for a serial card and this should be taken into consideration when thinking about the cost. The modem uses the AM modem chip. This is the all singing all dancing chip which is capable of handling all baud rates, Bell (American) and CCITT (UK, Europe, and Australia) Standards. The Auto-dialer is very sweet, and I found a fascination in hearing the soft clicks as it dialed up the numbers!

The company has ventured considerable expense in developing this modem card and would be interested in producing them on a commercial scale. Therefore if you are interested in buying one of these sophisticated modems, please telephone Brian Morris of AMTECH on 01-937-2810. The price would be in the region of £300.00 but would include the software as above.

AMTECH have also agreed to supply any updates of their software to registered users at a nominal price, presumably to cover media and postage.

CONCLUSION

ASCII EXPRESS PROFESSIONAL is I think the best of the four programs, and if your pocket can stretch that far it represents not only great flexibility but is also excellent value for money.

At the less expensive end of the market it is difficult to decide between standard ASCII EXPRESS and DATA CAPTURE. AE has many of the features of the professional version like the line editor and the Macro facility but I thought Data Capture easier to use. Overall I think I would go for AE purely on the example given by its big brother.

I am afraid that VISITERM does not impress me in comparison with any of the other programs reviewed. It lacks elements which I think are fundamental to a good communications program, particularly the lack of a copy or data buffer. At half the list price it may be value for money, but not as it stands.

AMTECH is unique amongst these as it is primarily a Prestel/ Micronet access program with the added utility of accessing standard 300 baud Bulletin Boards and similar systems. As a Prestel system it is very good, giving a cheap and attractive colour display on the Apple. The 300 Baud program is basic but perfectly adequate and will serve the Prestel user well by giving him the choice, depending on modem availablity.

I would like to thank PETE & PAM who provided the review copies of ASCII EXPRESS Professional & Standard and DATA CAPTURE 4.0.

Finally I would like to thank everyone who answered my questionnaire in the last Update on the subject of communications. The response has been so great that I'm afraid I won't manage to answer all the questions sent in. Could you instead please telephone me on (0742) 661096 after 8 pm if you want to ask me anything on the subject of communications.

Of course if you have the equipment together, then you can call up the BASUG Bulletin Board (BABBS) on (0742) 667983 and use it as a message board. That's what all this has been about after all.

****

Tandy are selling those fine mesh monitor screens for about £12. They fit most 12 inch monitors and really are very good at killing glare. Not quite Sirius but not bad!

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Book Reviews

Title: CP/M and the Personal Computer
Authors: Thomas A Dwyer & Margot Critchfield
Price: £10.95
Publishers: Addison-Wesley
Paperback : 11 x 8.5 inches : 500 pages

Those of you who have CP/M installed on your Apple and who also program, probably still remember the nasty shock you experienced when you used this operating system for the first time. CP/M for those of you who do not know of it, is a well established operating system that uses the Z80 family of processors rather than the 6502 series used in the standard Apple. Adding it to a machine via the Softcard opens up to the user many programs not otherwise available such as Wordstar, Dbase II and a large selection of public domain software, some of which will soon be available in our own software library courtesy of the librarian and the CP/M Users Group.

As CP/M in its natural state is not the most friendly of operating systems to use, the newcomer needs all the help he, or she, can get and the book under review appears to offer just that. It contains six clearly defined chapters each of which is split to between five and eight sub-headings. At the end of each chapter can be found Lab exercises which are step by step, hands on experiments covering most of what has been learnt in that section, followed by some practical problems and projects that help to consolidate the learning process.

Chapter One is the obligatory "What is CP/M' which is always advisable to read regardless of your specific interests. It points out that CP/M will behave in a similar manner whatever type or make of computer it is running on but that there can be some slight differences. With that in mind the authors have used three computer systems and throughout the book mention is made whenever one of the systems varies from the norm. The three machines used are the Intcolor ISC colour computer, an S100 system and an Apple with a Z80 CP/M Softcard installed.

Chapter two is called 'CP/M in Action' and introduces some of the utility programs that make CP/M not only outstanding but probably the most well known and used operating system around today. File naming conventions, which many Applesoft users find restrictive, are explained and also something all disk users are familiar with, the need for back-up copies and how to go about making them using the PIP program. Chapter Three continues in this vein with an introduction to ED, the CP/M editor program and, among other things, an explanation of physical and logical devices and how to change their assignments and attributes. The Lab exercises in this chapter are larger than usual as they contain a review of ten transient and built in programs and commands.

Chapter Four is a departure from the average book on CP/M as it introduces the reader to business software in the form of no less than three word processors, (including Wordstar), Dbase II, Supercalc and a suite of five accounts programs from Peachtree Ltd. Actual screen displays and printouts are shown enabling a potential user to see what may be expected from these programs and, in the case of the word processors, Dbase II and Supercalc there are Lab exercises to try, providing that the software is available of course.

'CP/M meets Basic' is the title of chapter five and after a short overview the reader is introduced to the delights of MBASIC and another high level language called 'C'. Other areas in this section include compilers, using the CP/M ED program to edit MBASIC files, (ED can make global changes throughout the file whereas the MBASIC built in editor is only able to work on a line by line basis). An interesting little trick to get around the PRINT and LPRINT limitations of MBASIC is also given.

The final chapter is by far the largest, running as it does into nearly 200 pages. Many readers will see the words 'Assembly Language Programming' and 'How to Modify CP/M' and hang a 'Not Today Thank You' sign on their door. While this is understandable it is also a great pity because just working slowly through this chapter and trying the step by step instructions of the many Lab exercises will help the reader understand CP/M and how it works a lot more than by just reading the previous chapters alone. It must be stressed that, despite the title, trying to teach assembly language is not part of this chapters brief. Even so the first fifty pages are devoted to a short course to enable the reader to have a better understanding of what is going on when the authors get to the real meat of the subject, which covers things like modifying BIOS, CP/M file structures, adding customised I/O drivers and using DDT which, incidently stands for Dynamic Debugging Tool and not

Dichloro-diphenyl-trichloro-ethane the other well known bug killer.

There are a few things missing, for instance, the very short passage on the User command does not tell the reader how to move files between one user area and another. CP/M Version 3.0 or CP/M Plus as it is sometimes known, Concurrent CP/M 86 and MP/M are all only touched on briefly, although to be fair, while these are all advanced versions of CP/M, the authors have based their offering on the version most commonly used at the present time, CP/M 2.2.

In conclusion, who then is this book aimed at? It is really for the individual to decide just what he or she requires from CP/M. To just run commercial packages, the user should never need to know that CP/M exists and, as long as the programs are well written, has no real need to know how it works. For anyone else however, even the dedicated Basic programmer, it could prove to be a good replacement for the standard CP/M manual that is usually supplied with most systems. The book offers a good introduction to CP/M expecting no previous knowledge of the subject and can also act as a reference guide when the reader has become more conversant with the operating system. With this in mind, and a price which is suprisingly low in comparison to similar publications, it must be considered to be a worthwhile addition to anyone's library.

Title: Polishing your Apple, Vol. 2
Author: Herbert H. Honig
Price: £4.20
Stapled Pocket Book, 8.5 x 5.5 inches
83 pages plus appendices
Published by Howard H. Sams & Co.
Prentice/Hall International

reviewed by Graham Ashdowne

What a joy! On every page there is a GEM of an idea to be found. An ideal book for any programmer nearing, or just beyond, intermediate level programming.

The line by line descriptions of the techniques employed in the author's sample program demand a notebook to be handy to create your own reference book, as this book is written as a tutorial. Explanations are simple and 'hands on' interpretation rewarding.

Error handling, logic, memory conservation, operator and program speed are all covered and the tips, as they occur, are easy to compare with your own techniques. You will probably adopt the majority to your own fashion but will find the 'date handling' routines in contradiction with the theme of the book, being heavy on time.

Frustration was also caused by an index which cross-referenced the previous volume which, as an intermediate programmer, you probably would not buy. There is also reference to techniques covered by volume 1 in the text. Inevitable printing errors, embedded in the listing should not have included POKE values, nor GOSUBs to non-existant lines.

Most programmers today are healthy young persons but, being a middle-aged, bifocal VDU watcher, I have a personal dislike of programs which clutter a screen with data, place the information line at the top and the operator line at the bottom. Give me the user-friendly program, which puts my cursor somewhere across the middle - the logical vision centre. But accepting the need in certain programs, this excellent book shows you the way.

So to summarise:
Useful and probably a must for an intermediate programmer.
Difficult to use as a text or reference book, but good tutorial stuffing.
Index too thin.
Spoilt by reference to volume 1.

If you did not receive this book in your Christmas stocking, it's an ideal purchase with that book token from Aunt Emily.

Title: Apple II Computer Graphics
Authors: Williams, Kernaghan & Kernaghan
Publisher: Prentice/Hall
Price: £16.95

Reviewed by Mike Siggins

It is always interesting for me to see a new entrant in the range of books concerning graphics on the Apple. This one ranks with the best of the bunch but seems to have something of a personality crisis as I will explain later. The book's index outlines the scope of the book and is the standard fare for introductory texts. The difference is made by the stature of the authors who are well known in the American Hobby and also seem to be able to write to a reasonable standard.

The book commences with several very simple chapters which will not pose too many

problems for those of you familiar with Applesoft. The basics are explained clearly and provide a good grounding for the following chapters. The usual subjects are included: Lo and Hi res commands, Text, Screen format, saving, etc. A rudimentary tutorial on the monitor and the standard explanation of hardware switches are also included.

The later chapters provide the coverage for the more advanced topics and are really little more than an introduction to graphics concepts through the use of Applesoft programs. The chapters are accurate and well explained but I feel that anyone but the beginner will learn little from this section. The subjects covered are rudimentary colour mixing, graph plotting, byte shapes and collision detection.

The underlying problem with the book is that it takes so long to deal with the simple topics that the interesting subjects are skimped. There is no way that a book such as this can cover all the items needed so it must therefore be seen as a joint purchase with, say, the Stanton book reviewed in Hardcore vol.2 no.5. This would provide a substantial grounding in graphics but it still won't make you a Nasir or a Budge.

The root of the problem is that the more advanced routines used by the pros must be written in Assembler and neither book explains this. Both seem to suggest that good animation can be achieved with the routines in their books but this is simply not true. At best, the routines will move one or two shapes smoothly but they set no amazing standards.

If you want to do professional standard graphics that appear in the top arcade and adventure games, then these books must be seen as the bare minimum of knowledge and a good deal of experimenting is needed on your own. Alternatively, you could make use of programs such as the 'Arcade Machine' and save yourself a lot of problems.

Surprisingly, there is still a shortage of good graphics books for the Apple and none which provide inspiration for the 'intermediate' programmer or indeed expose the trade secrets of hi-speed animation. Hopefully there will soon be a book to explain assembly language based routines for byte shapes, multi-colour fast fill and all the other techniques that go toward making classics like 'Bandits' or the Hi-res adventure series. However, the review book does little more than get you onto the first rung of this ladder and I believe this was the intention of the authors. They seem to have fallen foul of the distorted prose we always seem to find on the cover, presumably compiled by some over-zealous PR man.

Overall, the book is an acceptable basic introduction to graphics on the Apple but I would warn the more experienced user to save his money as the book provides only the simplest outlines of the more advanced topics.

Title: Better Basic for the Apple
Authors: Hume, J.N.P. & Holt, A.C.
Publisher: Reston Publishing Co. (Prentice-Hall)
Price: £12.70

Reviewer: Brian Whalley

"This book is intended to be read by someone beginning to learn about computer programming" say the authors, adding that "no particular mathematical background beyond arithmetic is needed" - though the contents of Chapter 18 printed on the page opposite this statement may worry the non-mathematical beginner not yet ready for "Predeclared Mathematical Functions" and "Solving Polynomial Equations". To be fair, the maths required for the other seventeen chapters is extremely limited, although a "calculation" bias does show through from time to time, as on page 21 when we are told that "in Basic the form of a constant....is 1.63564242E9" and that "the first part is called the fraction part or mantissa, the second part the exponent" before we are introduced to "fractions or mixed numbers" such as 0.5!

The book starts with a detailed table of Contents. After an "Introduction to Structured Programming" (more of this later), the authors have a brief and disjointed look at "The Computer" where we learn that "the word BILL would be transmitted as 1001101100010010100l" (if the authors, the reviewer or the printer of Hardcore has got a 1 or 0 wrong, it doesn't matter much, does it?!). In spite of early references to the use of tape as a mass storage device, there follows a dismissive comment that "the use of audio-tape cassettes results in very slow operation whenever secondary memory is required", and the book assumes the use of a disk drive and floppy disks ("these disks are often limp"!). An implication that we cannot even test out the PRINT statement until we have

loaded DOS moved me to examine the index for other references to DOS. Page 24 repeats a page 5 definition, and tells us that when we have booted DOS "the blinking cursor will appear on the screen at the upper left corner" (not with the standard System Master in my experience!). Page 32 (indexed) is a blank page whilst pages 33 (indexed) and 34 (not indexed) deal with "Initializing Your Own Diskette" by using ID as the name of the "identification program" with no mention at all of the (albeit curious!) Apple convention of using HELLO for that purpose. On page 39 we are informed that "to copy a diskette when you have two disk drives is described in the disk operating system manual (DOS 3.2)" - yes, 3.2! There is no mention at all of 3.3 (3.2.1 was released in July 1979 and 3.3 in August 1980), but neither is there anywhere a mention of sectors (either 13 or 16). The use of TEXT files for program merging by using EXEC is described, but not the RENUMBER program (with MERGE facility) which is on the DOS 3.3 System Master.

In a book aimed at beginners good indexing is essential for finding that half-remembered, half-understood detail. I looked up a few items that had exercised my own mind recently. One was the control of screen width (I can never remember the POKEs) and under Screen are references to page 9 (the computer can "output results on a screen") and page 17 ("a cathode ray tube"); eventually I found "window, size of" and even "size of window" in the index (less trivial cross referencing seems all too lacking). When converting a program from Tandy Basic to Applesoft, I had needed to clarify INT and FIX (the latter Tandy command truncates a negative decimal number); the only reference in the index to INT quotes page 158, which gives less explanation than the Applesoft Manual, with no examples to clarify the effect of INT on a negative number: for the non mathematical the fact that INT(-3.25) yields -4 needs thinking about and maybe a re-read of the definition of INT! Curiously, the page 158 reference includes the comment that "we have often used INT" and we find Truncation and Rounding more fully discussed on pages 50 and 61, but again with no mention of negative numbers.

By now, my overall reaction to this book must be showing through. Let me return to describing its content. Chapter 4 covers Editing & Saving Programs, and there follow chapters on Variables, Constants and Assignments; Control Flow; Structuring Control Flow; Arrays; Alphabetic Information

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The minimum requirements for the FX-80/100 editor are a 48k Apple][+ or Apple //e, with a DOS 3.3 disk drive and, of course, an Epson FX-80 (or FX-100) printer with a parallel interface card in slot 1.

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Handling; Structuring Your Attack on the Problem; the Computer Can Read English; Subprograms; Graphics (which includes Making Sounds); Searching & Sorting; Making Sure the Program Works; Files & Records; Data Structures; and finally Scientific Calculations. The word "structuring" occurs often, but quite what the authors mean by it remains a mystery to me. There is an Appendix headed "Syntax of Better Basic for the Apple", presumably to help the reader to get the best from the book, but I'm sure a quote from the first page of it will indicate what a turn-off that proves to be:

"The Applesoft Basic syntax is given in the Applesoft II Basic Programming Reference Manual .... What is given here is the syntax of the Basic that is presented in this book .... When presenting the syntax, items written in upper case letters, for example REM or END, denote either keywords of Applesoft Basic or are words like PROGRAM or SUBROUTINE which we are using, by convention, to make our programs more understandable .... We say they are terminal symbols; they will be part of the final program. Items written in lower case letters, for example "statement", denote one of a class of elements; each such item must appear in a subsequent (or perhaps preceding) definition. We call them syntactic elements. The syntax is defined in such a way that all syntactic elements can ultimately be substituted for by terminal symbols since the final program contains only terminal symbols."

Another ten pages expand on this theme. If this approach appeals, rush out and buy the book: I don't know of any other quite like it!

The chapter on Structuring Control Flow, after a curious discussion of Boolean operators without examples of their use, introduces "REPEAT UNTIL" and "IF ... THEN ... ELSE" structures which are missing from Applesoft and which the authors attempt to simulate by the use of REMarks. In fact, their use of REM statements must be described as prolific: in program samples short or long, early or late in the book, REMs form about one-third of every LISTing and are stated to be an important feature of "structured programming". Yet there are some unexplained oddities of line numbering, and a perpetration of the cardinal error of referencing REM statements by GOTO and even ONERR commands: entering sample programs without the REMS (reducing typing by as much as 50%) leads to disaster, as would using a renumber or compress utility.

The use of variable names as near as possible to English words seems to be an important feature of "Better Basic", but leads the authors to adopt examples of great length (NUMBEROFSTUDENTS,CNSERVATIVE, CMPERINCH) which I personally find confusing - and also wearisome to type, especially when reminded (correctly) that Applesoft recognises only the first two characters. Throughout the book, listings are printed with indentations for nested loops, described as "paragraphing" and as "a must in structured programming", along with the statement that "unfortunately when you enter a Basic program into your computer it is automatically turned into a form with no paragraphs" - clearly the authors have not discovered the use of colons immediately after line numbers to produce degrees of indentation (yet they seem to be under the impression that line numbers with leading zeros are possible). "Structuring", however, does not extend to screen formatting: there is recommendation to use HOME for clearing screen garbage at the start of a program, no suggestion for displaying a confirmatory title when a program is RUN, and no description of the valuable uses of VTAB and HTAB for laying out information or menus - indeed they manage nothing better than (late in the book, and as printed):

```
130 REM FIND OUT WHAT ACTION IS
    WANTED
140 INPUT "ENTER (1)INSERT(2)DELETE
    (3)OUTPUT";TYPE
145 REM CASE CONSTRUCT
150 ON TYPE GOTO 160,210,260
```

GET appears in the Appendix of Reserved Words but is clearly not favoured, whilst of VTAB and HTAB they comment that "you may find all this cursor movement more trouble than it is worth"! Their other main reference to cursor control is in respect of line editing, an acknowledged weakness of the Apple II, but it doesn't help that they describe only the use of ESC-A, ESC-B, ESC-C, or ESC-D, with no mention of using ESC followed by the I, J, K and M keys.

There are Appendices of Applesoft Basic Commands (DOS Commands), Reserved Words in Applesoft, Built-in Applesoft Basic Functions, Error Messages and Codes, and the ASCII Code. Although PEEK, POKE and CALL get the odd mention in the text, there is no reference list of useful ones. The Index runs to eleven pages, but there are many mistakes additional to those mentioned above, and there are other signs of poor proof-reading elsewhere in the book.

Prentice-Hall have published several books on Basic for the Apple. Campbell & Zimmerman ("Programming the Apple") were strongly criticised in the December issue of Hardcore, but I consider their book superior to this one even for a beginner. Richard Haskell's "Apple Basic" is much more user-friendly with real screen displays and real listings. Why the publishers let this one loose on us is a mystery, unless the authors' page three comment that "Structured Programming is the new philosophy" serves to indicate a leap onto a profitable bandwaggon.

Title: Games Apples Play
Authors: Mark Capella & Michael D Weinstock
Price: £12.70
Published by Reston Publishing Co. Inc.
Prentice/Hall International
Spirally bound A4

reviewed by Walter Anderton

This is more a book of exercises in Applesoft Basic than a book on how to write games. The games, 38 of them, are listed together with comments and are intended for the novice programmer to study and explore. Enjoyment of the games is an added bonus, but it must be said straightaway that the games themselves are fairly simple and include many old war-horses such as Hangman, Biorhythms, Little Brick Out and even a version of Haunted Caves.

The opening seven pages are devoted to a general introduction setting out objectives and giving clear, sensible advice on how to explore the inner workings of a Basic program. The reader is encouraged to experiment with the published programs in order to get a firm grasp of how they work. The games listings occupy the rest of the book. Two of the listings are accompanied by detailed, line-by-line comments. The other 36 programs just have brief introductions drawing attention to salient features as there is obviously no need to commment repeatedly on commands that inevitably occur in just about any program.

The games do not seem to be graded in any way as regards complexity. Thus the detailed comments range from explaining such fundamentals as REM and VTAB to the more esoteric realms of DEF FN(X) and ON...GOSUB... The comments are refreshingly free from jargon and in general are clear and adequate, though I thought one or two of the explanations would leave a novice scratching his head. For example, the definition of DEF FN is spoilt by badly laid out examples, whilst the explanation of a line that establishes whether a statement is true or false leaves much to be desired. Some of the games use a sound-effect routine poked in from location 768 onwards, but there is little explanation about how such a machine-code program operates.

The program listings themselves are clearly printed (though a chunk is missing from one of them) and are accompanied by jolly sketches which brighten the text even if they add little to one's understanding of the program. The publishers will apparently "rush you" a diskette of the games if you send the coupon at the back of the book to California together with $17.70. Whilst this would obviously cut out the chore of typing, the enforced discipline of going through the programs line by line seems to me to be an essential aid to learning.

The programs are properly structured and free from GOTO rat's nests, each game being divided into distinct blocks which form sub-routines. Nevertheless, the programs do contain a number of oddities. For a start, the line numbers do not always follow at regular intervals. Some of the intervals seem to be quite arbitrary. Pretty well all of the games include sections in which the line numbers go up in ones - which does nothing to facilitate the experimental changes advocated in the introduction. For some unexplained reason, all arrays are dimensioned regardless of whether Applesoft requires it. Although, perhaps, less important in "fun" programs than elsewhere, provision is not always made for error-trapping; nor is there any discussion of its importance. Lastly, and oddest of all in a book of games, there is no mention of high-resolution graphics. There are plenty of graphics programs, nearly two-thirds of the games involve graphics, but they are all in low-resolution.

With all this emphasis on low-resolution graphics, and the other programming quirks, I cannot help wondering whether, perhaps, this is a "translation" into Applesoft of a book originally intended for a less sophisticated computer. As far as the U.K. is concerned, it seems to me that the Apple is not the happiest choice of machine for a book of this nature. Based on one of the less-expensive, games-orientated machines, I think that the book could prove very popular - particularly in the hands of an enthusiastic youngster who would enjoy exploring the games, inventing his own variations and learning a good deal about Basic in the process. From the point of view of a BASUG member, however, this is a distinctly qualified recommendation.

Education

A Review by Norah Arnold

MICRO STORIES

Language Teaching Stories by Josephine Jones
with Computer Activities by Christopher Jones

My first reaction on being given this package to review was to hope that it was not as bad as the last program of its type that I had the misfortune to come across. The presentation of the package is fairly good, comprising a sturdy plastic wallet with an integral cassette holder inside the front cover and a pouch for the two disks inside the back cover. It would stand up to reasonable wear and tear in the classroom.

The manual is quite thorough having twenty-one pages altogether. Having read the introduction I decided to take a look at the disks but was a little put out to find myself being told to boot up by switching the Apple's power on or by typing PR#1 - a most unfortunate mistake which would confuse a beginner right at the outset. Having got started on the Micro Stories Disk 1 I did not refer to the manual as the on-screen instructions are adequate.

Disk 1 contains the Clozemaster driver program plus the text of twenty-four short stories. The story titles are presented and you pick your story. You could choose to listen to the cassette tape of the story before you start or not, just as you please. Having chosen the story you are then asked to decide how often you want a word deleted from the text, the minimum being every fifteen words, the maximum every five words. When the story appears, inverse numbers replace the deleted words. The text may be scrolled by pressing the space bar and you may attempt to fill the gaps in the story in any order you like. Help options become available when trying to fill the gaps; typing '+' gives you the first letter of the answer, '*' = Cheat and gives you the whole answer, while simply typing Return lets you drop out and have a go at another missing word.

If you complete the text or exit before completion you are presented with an options menu from which you can choose another story, see how your attempt was rated, see the answers or exit to Basic.

Disk 2 contains two programs, Storyboard and Dictation. If you choose the Storyboard program you will be asked to choose your text from the same list of titles as for Disk 1. Having chosen the story you may choose to start without seeing the text, see it for five seconds or for thirty seconds, or see the text for as long as you like. Next you are presented with a skeleton of the story with letters diplayed as spaces and punctuation marks in place. On guessing a word the computer checks the text and if the word is in the story it is shown in place as many times as necessary. Again Help functions are available and are adequate for the situation. There is no scoring in Storyboard which helps to encourage guessing and use of the Help functions without fear of penalties.

The Dictation program also lets you see the text before you start but not for an unlimited time, and you may choose whether or not to have a skeleton text to help you. You could try this entirely from memory but I would think its greatest use would be with an audio-cassette, listening to a phrase or two at a time before typing them.

The stories themselves are varied in subject matter and used carefully could fit into a variety of situations. I listened to the cassette tape of the stories and came to the conclusion that the speed at which the stories are read may be too fast for some primary school children.

Taking the package as a whole I liked it and can see a great many uses for it in school. It is aimed mainly at primary and middle schools and it would also be suitable for learners of English as a foreign language at intermediate level. Like every package of its kind the teacher or parent needs to judge when it can be used profitably. Personally I would view it as a fun package to be used by one or two children at a time in an informal way.

The full text of the stories appears in the manual and the Micro Stories package can be purchased from Wida Software for £20.

****

Apple have announced an "Education for Life" Programme:-

"Educational establishments will now be able to purchase Apple products, through authorised dealers, at a substantial discount off Apple's suggested retail prices. For example, an Apple //e processor, disk drive, controlller card and monitor can be purchased for under £800.

The programme will run until March 31st 1984."

Competitions

First, apologies to those of you who didn't enter the competitions because the closing date was too close or past. When Hardcore went to press, the date was in fact quite realistic but several delays (though each one was quite short) brought the magazine out just late enough to be further hampered by the Christmas postal holdups. In fact, we accepted any entry received by the end of December. The prizes should by now be in the hands of the lucky winners.

Competition 1 - Programming Quirk.

Only one entry gave a real answer to the two parts of the question so there are no runners up.

The winner is Mr. W. Anderton of Hampton, Middlesex. Here is his solution:

The key to Richard Teed's program lies in the first ten bytes of the machine-language program that is poked in at 7676 onwards - the remaining bytes, and the rest of the program really, are a red herring. As shown in the printout, these ten bytes cause first a switch from text to graphics, and then after a 2 cycle delay brought about by '234' (NOP in Assembly Language) a switch from graphics to text. A jump back to the beginning causes the program to switch endlessly from text to graphics and back again giving the alternate stripes on the screen.
The changes in appearance on re-running are a bit trickier to explain. Obviously, the 13 cycle switching routine must vary in phase compared with the video signal sent to the display so that the starting point of the stripes can move across the screen. Why this should be so, I must admit I don't know.

```
1DFC:              1        ORG $1DFC
1DFC:8E 50 C0 2 START STX $C050
                    ;switch to graphics
1DFF:EA            3        NOP
                          ;delay 2 cycles
1E00:8E 51 C0 4             STX $C051
                          ;switch to text
1E03:4C FC 1D 5             JMP START
      ;delay 3 cycles & start again
```

Competition 2 - New Software.

We only received one suggestion for this where the suggested program had not already been written, so the prize goes to Peter Brown of Tarleton, Nr. Preston, Lancs.
I think that with the price of memory dropping and many people now having between 32k and 128k RAM cards a much better and hence larger language could be accommodated. The language I would like to see would be similar to structured BASIC but compiled before execution while still leaving the source code listable and hence easily alterable. I should also like to see incorporated PRINT USING with optional PICTURE statements as in COBOL and recursive PERFORM statements to named paragraphs with local variables. Such niceties as auto line numbering, called paragraphs from disk and built in RENUMBER and MERGE facilities would also be useful.

Crossword Solution.

ACROSS.

1	BASUG	AS (when) in BUG
4	ONERROR	R(ight) OR RENO reversed
7	OAR	videO ARcade
8	SPORT	S + PORT
9	GATES	double meaning (sports crowds + circuit gates)
10	COPYRIGHT	double meaning
12	ROM	RM (marine) with nothing (O) in him
13	EPIC	AppIE PICture
15	TASC	Sounds like "task"
19	NET	NETwork = TEN returned
20	INCREMENT	make more. Chinese pronunciation of INCLEMENT
23	DEBUG	budge (anagram)
24	ONTAP	"on tape" minus the "e"
25	MIG	the MIGhty micro
26	STEPSUP	double meaning
27	SPACE	room. Also CHR$(32) or in binary 100000

DOWN.

1	BASIC	BA + SIC ("so" in Latin)
2	SLOOP	S + LOOP
3	GOTCRACKING	started (eggs/crackers)
4	ORANGE	Cox's orange = apple
5	RETURNS	double meaning
6	RESUME	double meaning
9	GOTOTHEDOGS	go wrong. cf.ONERRORGOTO
11	ODE	writing in verse. mODEm
14	POTABLE	TAB inside POLE
16	CON	initial letters of "computer offering new"
17	ANODES	ODE (11 down) inside ANS (short answer)
18	SCRUMP	steal apples
21	EXTRA	teletEXT RAcket
22	TEPEE	EE (Ile's) + PET reversed

The winner is Mr. D. I. Cobb of Colchester, Essex.
Runners up:
Ray Harris of Swanley, Kent.
H. N. Dobbs of Waterford, Eire.
Those of you not lucky enough to win a free copy of Crossword Master can of course obtain one from Wida Software.

Exhibitions

In line with BASUG's first commandment "Thou shalt not be restricted to Watford", the exhibition unit went visiting up the M1, (turning left at Derby), and on to Manchester to attend the Northern Computer Fair at Belle Vue.

It is regrettable to report that whenever Practical Computing magazine holds Computer Fairs in the Midlands and the North, they degenerate into games shows for Sinclair and Oric etc. despite advertising to the contrary. This one was no different although it did not stop us from meeting some existing members and signing up a few new ones. Many thanks to Bob Raikes for making the long trek from Leighton Buzzard and to Quentin Reidford from Sheffield, both of whom gave up their Saturday to man the stand.

Some of you that we met asked why we did not attend the Manchester Apple Village held a couple of weeks previously in November 83 by Windfall (or Apple User as they are now known). We certainly would have liked to but unfortunately the commitment to appear at Belle Vue had already been made. By the time you read this, it is hoped that we will have secured a place at the next Village which is to be held in Basildon, Essex on 25th-28th March 1984.

One of the favourite questions that we get at the shows we attend is "Where is the nearest Apple Users Group in my area?" or alternatively "Why don't you start a local group in my town?" The answers to either of these questions are not always easy although we score a reasonable hit rate with the former. In the first instance, there are many local groups around the country that we still do not know about. If you belong to one of these, please let us know. Tell us when and where you meet etc. so that we can help you expand and also help those people who still come under the heading of Lonely Apples.

Quentin Reidford probably gave the best answer to the latter question in his Disconnected Jottings article (June 83 issue), when he said that "BASUG was started as a self help group". Half a dozen Apple users got together some years ago to sort out each others hardware and software problems and queries. From those small beginnings, BASUG, like Topsy, just grew and grew until it became what it is today. The whole point of this statement is that no one organised that first meeting for those founder members, they did it themselves. Today, should you wish to belong to a local group and one does not exist in your area then we can help you start one. Giving advice on how to go about it is one way, advertising details of the new (or proposed) club within the pages of Hardcore is another, but we cannot do it all for you, it does need your active support.

What, you may ask, is this to do with exhibitions? The answer lies in the fact that those who ask questions about local groups are always interested in joining but are dubious about actually starting one alone. It may therefore, be of interest to know that some of the groups around today owe their existence to members who met each other while helping out on a BASUG stand at an exhibition. If you are really serious about meeting people in your locality with a view to starting a group then spend half a day or more on the stand at the next show in your area that we are attending. We supply you with a free pass to enter the show and plenty of time for a good look around. It is not necessary to be a specialist in any facet of the Apple, indeed even beginners are welcome and we are not suggesting that you be left alone on the stand either. There will always be someone who has exhibition experience with you. For further information of future shows keep an eye on the exhibition column in this magazine and let us know through the normal address if you can help out and on what day. In this way we can expand our coverage of shows, meet more people and hopefully start even more local groups.

PLEASE HELP US TO HELP YOU !!!

Lonely Apples

Stan Harding would like to contact (telephone) a user of an Apple /// and an Epson 100/III for help.

He can be reached at:

The Oxford McTimoney Chiropractic Clinic
[illegible]

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Apple //e Super Hi-Res

by Peter Trinder

Ever since I first bought my //e I was intrigued by the slightly shy way that our friends at Apple referred to the Super Hi-res capability of the new 80 Column EXTENDED Card. I was searching through the //e Reference Manual and the 80 Column Card Manuals and they do give the clues needed to utilise the Super Hi-Res.

I have found some notes by Don Worth, in which he gives the secrets. When Apple people, so the story goes, were working on the Apple //e, an engineer, who was working on the 80 column card, found that in designing the card to produce 80 columns of text with an additional 64k of RAM, he had nearly all the elements to produce higher precision graphics as well.

The 80 column cards for the Apple //e work by bank switching the text page in main memory (which is normally only big enough to hold 24 lines of 40 characters) with an identically sized piece of memory on the card in the auxiliary slot. This additional "phantom" page contains every other character while the machine is in 80 column mode. With the new circuitry, when a program stores text in these memory pages, the characters are assembled into 24 lines of 80 columns on the display screen. It seemed natural that what could be one for text could also be done for graphics. The only fly in the ointment was that the hi-res graphics memory requirement is substantially larger than that for text display.

The extended 80 column text card solves the problem by having more than enough extra memory for a second hi-res screen page. Thus, double hi-res graphics were born. At first the engineer's little enhancement to the previously approved design for the card met with some resistance within Apple, but it finally received the go-ahead. Thanks to that unnamed engineer, we have the opportunity to take advantage of a remarkable new feature that may yet prove to be the most exciting of the many improvements made to the Apple II in several years.

WHAT DO YOU NEED?

To use double hi-res graphics you MUST have the following:-

1. An Apple //e computer with a revision B or later motherboard. There are NO revision A motherboards in the UK so far as we are aware. Anyhow your motherboard should have

APPLE COMPUTER INC
820-0064-B (C) 1982

behind the slots.

2. An extended 80 Column Text Card.

3. A jumper connecting the two pins on J1 of the extended 80 Column Text Card.

It isn't necessary to program in machine code to use Double Hi-res Graphics although using Basic to program results in fairly slow plotting.

WHAT IS DOUBLE HI-RES?

Double Hi-res Graphics can be used on a monochrome display to produce graphs that are twice as detailed horizontally, so instead of 280 dots across, you can now plot 560 finer dots across the screen. The vertical resolution is unchanged. As if this weren't enough, if double hi-res is used on a colour monitor, some real magic occurs: by manipulating the dots properly, one can produce up to fifteen (actually 16 if you count grey twice) colours in a resolution that's the equivalent of standard hi-res. These colours are almost, but not quite, the same as those available to you in Lo-res mode. There is another, hidden advantage over standard hi-res graphics in the way these colours can be arranged on screen.

An interesting side is that, with this new mode, the Apple //e graphics compare favourably with those of the IBM Personal Computer. The IBM PC has a medium res mode, similar to Apple's standard hi-res, which is 320 wide X 200 high (Apple's is 280 X 192). The Apple allows up to six colours on-screen in this mode (with some limitations) and the IBM allows only four. The IBM also provides a monochrome high-resolution mode that is 600 dots wide by 200 dots high. Just as in the Apple double hi-res, the IBM uses the same vertical resolution for both medium and high-resolution modes. It turns out that, using an almost identical method, this IBM pc hi-res mode can also be made to produce 16 colours (at least on a colour TV or Monitor). This is probably no coincidence. In

essence, there is very little difference between the graphics capabilities of the two machines now that Apple has double hi-res graphics. In fact, from a programming standpoint it turns out to be more flexible.

HOW DOUBLE HI-RES WORKS.

To use Double Hi-res Graphics you need some insight into how it works, but to understand this you need to know how standard hi-res works. Each byte in memory starting at location $2000, is scanned by the video circuitry in the Apple. The bits (1s and 0s) within each byte are interpreted as the presence or absence of dots on the screen. The first dot at 0,0 (the upper left corner of the screen) is determined by the least significant bit of the byte at $2000. If that bit is a 1, then the dot is lit; if that bit is a 0, then the screen is black at that point. The eighth dot is determined by the least significant bit of the byte at $2001. Thus, each byte maps only seven dots (or pixels, as they are called) on the screen.

The most significant bit in each byte is used to select a colour "palette" for the dots in that byte and that byte only. If the most significant bit is 0 then only black, green, magenta and white may be generated for that group of seven dots. If the most significant bit is 1, then black, blue, orange and white may be generated. Unless they are determined by different bytes, no two horizontally adjacent dots may be green and blue, for example. This bit is called the colour bit.

An additional aspect of this system is that, within a group of dots, the colour generated is determined by the combinations of pairs of dots. If both dots of a given pair are off, black is the result. If both are on, white is displayed. If the first is on and the second off (and the colour bit is 0), a green dot is shown. And, if the first dot is off and the second one on magenta appears. Herein lies a basic restriction that few Apple owners realise - if you are using hi-res colour display, you are really getting only half the resolution you would in monochrome. Thus, there are only 140 separately definable coloured dots across a horizontal row on the screen.

Now to the double hi-res mode. In double hi-res, the picture is generated by taking a byte from auxiliary memory and the corresponding byte from main memory and displaying them together. The same horizontal screen space occupied by two dots in standard hi-res is now occupied by four dots. As it is with the pairs in standard hi-res these groups of four dots may be configured to produce multiple colours. Unlike two dots, which have only four possible arrangements, four dots can have sixteen. This is what gives sixteen colours in double hi-res. To produce a colour, each group of four horizontally adjacent pixels on the screen (starting with the bit for the dot at 0,0 at $2000) are grouped into one colour unit. If four are off you get black; if all four are on, you get white; and if some are on and some off, you get a colour. The first seven dots are determined by the value of the byte at $2000 on the extended 80 column card. The second seven come from the
same memory address in main memory. Since both bytes are addressed by the same location value, only one may be written to by a program at a time (the video circuitry can read both at once, since it is independent of the microprocessor.

This requires page flipping, as we will see later. This means that if you are using colour with double hi-res graphics you are really using the same old resolution (140 definable dots across) but you will have ten more colours to play with. On a monochrome monitor, however you will see each and every dot, for a total of 560 horizontal positions. You may have noticed that there was no mention made here of the colour bit in each byte. Double hi-res ignores it - meaning that you can put any colour next to any other. This is the third advantage mentioned earlier.

HOW DO YOU DO IT?

You may already be aware of the fact that double hi-res is not supported by Applesoft. It didn't even exist when that language was created for the Apple. It turns out that much of Applesoft's standard hi-res can be persuaded to support double hi-res as well. There are two Basic subroutines that you will need to use double hi-res graphics. Both are part of the example program in listing No.1.

The first subroutine occupies lines 180 to 250 in listing 1. Its purpose is to set up the environment for double hi-res. In a , it is equivalent to the HGR statement ugh for double hi-res graphics it be called DHGR if it existed). Several

```
10 REM Listing number 1
20 REM EXAMPLE OF A SIMPLE DOUBLE HI-RES PROGRAM
30 REM WHICH DRAWS SEVERAL DIGONAL LINES
40 REM
50 REM DON D WORTH -- 25 MAY 1983
60 REM
70 PRINT CHR$(4);"PR#3": PRINT CHR$(12): REM TURN ON 80COL CARD & FORMFEED
80 VTAB22 : HTAB25 : PRINT "Double Hires Ignoring Colour"
90  GOSUB 210
100 HCOLOR=7
110 FOR DX = 0 TO 10
120 CX = 0  : Y = 0
130 FOR X = CX TO CX + DX - 1 : GOSUB 290 : NEXT X
140 CX = CX + DX : Y = Y + 1
150 IF X < 560 AND Y < 160 THEN 130
160 NEXT DX
170 END
180 REM
190 REM ***** Double Hires INITIALISATION AND SCREEN CLEAR *****
200 REM
210 POKE 49154,0 : POKE 49156,0 : POKE 49153,0 : POKE 49239,0
220 POKE 49160,0 : POKE 49246,0 : POKE 49232,0 : POKE 49165,0
230 HGR
240 POKE 49237,0
250 CALL 62450
260 REM
270 REM **** DOUBLE HI RES PLOT SUBROUTINE ****
280 REM
290 XX = INT (X/7) : PG = XX / 2 - INT (XX/2)
300 XX = INT (XX/2) + ((X/7) - XX)
310 XX = INT (XX * 7 + .5)
320 POKE 49237,0 : IF PG THEN POKE 49236,0
330 IF XX > 279 THEN RETURN
340 HPLOT XX,Y
350 POKE 49236,0
360 RETURN
```

pokes are perfomed first. They do the following:-

POKE 49154,0	RAMRD	off
POKE 49156,0	RAMWRT	off
POKE 49153,0	80STORE	on
POKE 49239,0	HIRES	on
POKE 49160,0	ALTZP	off
POKE 49246,0	AN3	on
POKE 49232,0	TEXT	off
POKE 49165,0	80COL	on

The key pokes here are those to 80STORE, HIRES, AN3, TEXT, and 80COL. Turning on hi-res with annunciator 3 while in 80 column mode enables double hi-res (assuming you have the jumper installed on your extended 80 column card). The TEXT poke switches to graphics from text mode. The 80STORE is used again later allow your program to shift its access between the two hi-res memory pages.

Line 230 does a standard HGR to clear the screen. The tricky part is telling the Apple to write in the auxiliary memory hi-res area. This is accomplished by poking 49237. This is the trick that makes it all happen. With the 80STORE switch set, poking 49237 will switch from writing hi-res information in the main memory buffer to writing it in the corresponding memory in the 80 column card; poking 49236 switches back. Thus, if the dot you wish to plot is in the first group of seven dots on a line, or on any odd-numbered group of seven (numbering the first group 1), you merely poke 49237 (enabling auxiliary memory for the hi-res page) and do a garden-variety HPLOT. If you want to plot a dot in an even-numbered group of seven, poke 49236 first instead. Once the switch is made, CALL 62450, a standard Applesoft call to clear the hi-res screen, clears the auxiliary hi-res area.

You can draw lines in double hi-res, but with limitations. For instance, HPLOT 0,0 to 279,0 results in a dashed line rather than a solid one. You may not ordinarily use HPLOT to draw a horizontal line in double hi-res

graphics, as it will perform its function entirely within one buffer or the other. Of course, if you are clever, you can do two HPLOTs with appropriate POKES preceding them to obtain a solid horizontal line. Vertical lines may be done with a single HPLOT, however.

The second subroutine occupies lines 260 through to 360. It takes the place of an

```
10 REM Listing number 2
20 REM EXAMPLE OF A COMPARISON OF SINE WAVES IN BOTH DOUBLE HI-RES
30 REM AND STANDARD HI-RES MODES
40 REM
50 REM DON D WORTH -- 25 MAY 1983
60 REM
70 PRINT CHR$(4);"PR#3" : PRINT CHR$(12): REM TURN ON 80COL CARD & FORMFEED
80 VTAB22 : HTAB25 : PRINT "Double Hires Ignoring Colour"
90 GOSUB 250
100 REM **** DOUBLE HI RES SINE WAVES ****
110 HCOLOR = 3 : HGR
120 POKE 49237,0
130 CALL 62450
140 FOR X = 0 TO 550 STEP 10 : Y = 80 : GOSUB 290 : NEXT X
150 FOR P = 6 TO 2 STEP -2
160 X = 0
170 FOR CX = 0 TO (3.14159 * P ) STEP (3.14159 * P/500)
180 Y = 80 + SIN (CX) * 70
190 GOSUB 290
200 X = X + 1
210 NEXT CX
220 NEXT P
230 GOTO 380
240 REM ***** Double Hires INITIALISATION AND SCREEN CLEAR *****
250 POKE 49154,0 : POKE 49156,0 : POKE 49153,0 : POKE 49239,0
260 POKE 49160,0 : POKE 49246,0 : POKE 49232,0 : POKE 49165,0
270 RETURN
280 REM ** DOUBLE HI-RES PLOT SUBROUTINE ***
290 XX = INT (X/7) : PG = XX / 2 - INT (XX/2)
300 XX = INT (XX/2) + ((X/7) - XX)
310 XX = INT (XX * 7 + .5)
320 POKE 49237,0 : IF PG THEN POKE 49236,0
330 IF XX > 279 THEN RETURN
340 HPLOT XX,Y
350 POKE 49236,0
360 RETURN
370 REM ** NOW PLOT SINE WAVES IN SINGLE HI RES **
380 HGR2 : POKE 49236,0 : POKE 49235,0
390 PRINT CHR$ (12) : VTAB22 : HTAB 25 : PRINT "PLEASE WAIT..."
400 FOR X = 0 TO 275 STEP 5 : Y = 80 : HPLOT X,Y : NEXT X
410 FOR P = 6 TO 2 STEP -2
420 X = 0
430 FOR CX = 0 TO (3.14159 * P) STEP (3.14159 * P/250)
440 Y = 80 + SIN (CX) * 70
450 HPLOT X,Y
460 X = X + 1
470 NEXT CX
480 NEXT P
490 REM *** ALLOW USER TO TOGGLE FROM SINGLE TO DOUBLE **
500 POKE 49236,0 : POKE 49235,0
510 PRINT CHR$ (12) : CALL-936 : VTAB 22 : PRINT "PRESS RETURN TO SEE"
520 INPUT "STANDARD HI-RES...";A$
530 PRINT CHR$(27); CHR$(17)
540 POKE 49164,0 : POKE 49152,0 : POKE 49237,0
550 POKE 49234,0 : POKE 49232,0
560 INPUT A$ : GOSUB 250 : GOTO 500
```

imaginary DHPLOT statement. Given X (in the range from 0 to 559) and Y (in the range from 0 to 191), it determines which buffer needs to be enabled (by finding out which group of seven dots is specified by X), pokes the proper soft switch, and performs a standard HPLOT. This subroutine will plot single points only - a subroutine to plot horizontal or diagonal lines is far more complicated and makes a good excercise for the reader.

Listing 1 draws several diagonal lines on-screen, using the two previously described subroutines. Since each dot must be individually computed, things go rather slowly. In this example, use a monochrome display or a colour TV with the colour turned down to get the best display.

Listing 2 offers a better chance to compare standard and double hi-res. First, a group of sine waves is drawn in double hi-res page two. When this is all complete, you can toggle back and forth, comparing the two versions, by pressing return. One thing to notice is that it is not a trivial matter to switch back and forth. Several POKES are required, and the 80 column mode must be turned off by ESC CONTROL Q (PRINT CHR$(27); CHR$(17)) or the 80 column will ruin the program. This is because the program turns off 80STORE, disabling without warning the 80 column support software's ability to page-flip between text screens.

```
10 REM LISTING NO.3
20 REM ** THIS PROGRAM DRAWS 16 COLOUR BARS ON THE SCREEN IN
30 REM ** DOUBLE HI-RES GRAPHICS MODE **
40 REM
50 REM  BY DON WORTH - 25/5/83
60 REM
70 PRINT CHR$(4);"PR#3 : PRINT CHR$(12) : PRINT
80 VTAB 21 : POKE 36,1 : PRINT"";
90  REM ***** Double Hires INITIALISATION AND SCREEN CLEAR *****
100 POKE 49154,0 : POKE 49156,0 : POKE 49153,0 : POKE 49239,0
110 POKE 49160,0 : POKE 49246,0 : POKE 49232,0 : POKE 49165,0
180 XB = 0
190 REM ** CLEAR SCREEN **
200 HGR
210 POKE 49237,0 : CALL 62450
220 HCOLOR = 7
230 DL = 73 / 16 : TB = - (DL / 2)
240 REM ** PLOT GROUPS OF 4 DOTS IN EVERY COMBINATION
250 FOR X0 = 0 TO 1
260 FOR X1 = 0 TO 1
270 FOR X2 = 0 TO 1
280 FOR X3 = 0 TO 1
290 TB = TB + DL : T = INT (TB)
300 VTAB 21 : POKE 36,T : PRINT X0 : POKE 36,T : PRINT X1
310 POKE 36,T : PRINT X2 : POKE 36,T : PRINT X3;
320 FOR AD = 0 TO 24 STEP 4
330 IF X0 THEN X = XB + AD: GOSUB 430
340 IF X1 THEN X = XB + 1 + AD : GOSUB 430
350 IF X2 THEN X = XB + 2 + AD : GOSUB 430
360 IF X3 THEN X = XB + 3 + AD : GOSUB 430
370 NEXT AD
380 XB = XB +32
390 NEXT X3,X2,X1,X0
400 PRINT" ";: GET A$
410 END
420 REM ** DOUBLE HI-RES VERTICAL LINE DRAW ROUTINE **-
430 XX = INT (X/7) : PG = XX / 2 - INT (XX/2)
440 XX = INT (XX/2) + ((X/7) - XX)
450 XX = INT (XX * 7 + .5)
460 POKE 49237,0 : IF PG THEN POKE 49236,0
470 HPLOT XX,0 TO XX,159
480 POKE 49236,0
490 RETURN
```

The final example program in listing 3 is where the real fun begins. We have all probably RUN COLOR DEMO on the DOS Systems Master. It draws colour bars in the lo-res mode, showing all 16 colours at once. A similar program can be written to do this in hi-res, but it's not nearly as pretty (only six colours). If you run listing 3 you'll see something very much like the lo-res colour bars, but they are displayed in double hi-res. The colour bars are formed by plotting every possible combination of four dots - on or off. Thus, the first bar is black (all 4 dots in each group are off), the second is 3 off and last one on, the third is off-off-on-off, and so on. White is produced last with on-on-on-on. Exactly like counting to sixteen in binary. It is critical that these patterns appear starting in columns evenly divisible by 4 (if you count the first column as 0). To see what happens if you don't, try setting XB in line 180 to 1, 2, or 3. The result is decorative but not particularly useful.

Now that you have seen what can be done, it must be obvious that, with every Apple//e and extended 80 column card sold, the odds increase that there will be commercial and public domain software available to take advantage of double hi-res. In fact there is a company marketing a language called DOUBLESTUFF which loads into the RAMCARD area on booting their disk. And instead of loading Integer it loads DOUBLE Hi-res language. You can switch from FP to DFP (using these commands) and the prompt changes fron [to {. DFP allows Double Lo-res as well as Double-Hi-Res. Double Lo-res PLOTs X from 0 to 79, Double Hi-res HPLOTs X from 0 to 559. HCOLOR now is from 0 to 16. These are virtually the same tones as the normal Lo-res. This program is available from Doublestuff Software Development Inc., 2053 West 11th Street, Brooklyn , New York 11223 at $39.95. (They don't take Mastercard) There is an advertisement in the October and November BYTE (page 256).

BARGAIN

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Vision-80

Up the learning curve

A user's report
including a cure for shift-key bounce

VISION-80

by Dougal Hendry

The Vision-80 is an accessory plug-in circuit board for the various Apple II's. It's primary aims are to provide the 80 column wide text display of a traditional terminal, and a means of inputting those characters not on the II euro's keyboard. It cost about £200 inc. VAT.

You can read the adverts for a full list of features. I'm going to relate my experiences. If others have differing or deeper experience, I hope they will write and enlighten all of us.

Briefly, it works and well too. The display legibility is really good BUT, looking behind the results does not inspire me with confidence...

My first one quickly developed a flaky screen memory bit, shifting the case of characters scrolled into one particular location. This type of thing is not uncommon with young chips; it's actually known as infant mortality, but... As the chips are soldered in, (the only exceptions are the firmware EPROMS), the board had to go back. It went with a letter requesting: the firmware version for 50 (not 60) Hz, a copy of the demo disk referred to in the documentation, the font editor software (B,8,0,$ and & being rather too similar, and tails of y,j,p,q,g brushing the tops of neighbouring T's, etc), and a cure for very irritating Shift Key bounce. Pressing the Shift key and releasing it without pressing any other key toggles the Caps Lock mode, and with bounce, this occurs most times you try to Shift. The nature of any mechanical switch is to "bounce", or flutter, for a few thousandths of a second, just as it opens or closes. Unfortunately, that is a few thousand cycles of the processor... To use the switch on its own, (rather than with a character key), then it must be debounced either in hardware or software.

While waiting for a replacement, I started hearing gossip about squabbles between

Zofarry, the Australian designers, and Vista, the "licensed" American manufacturers of the card I'd had.

The second card I was offered was also a Vista. It had 50Hz firmware, no demo disk, no font editor, Shift Key bounce, but the (new) good clearance between descenders and capital letters was at the expense of the number of lines, there being only 17 lines showing on screen...22 of the 24 when the monitor was tweaked as far as it would go. That one was a Revision 2 board and Version 2.0 Firmware.

The third one was a "genuine" Zofarry Revision 5, with 6.5A firmware. It had the (copy protected!) demo/utilities disk, and a Shift Key wire with LED Caps Lock indicator and debounce filter! (Detail: A 1n Tantalum Capacitor to +5V, a 1k Resistor to the PB input. Join together the free ends with the wire from the keyboard.) BUT the display still didn't fit the screen... Relations with my local dealer were becoming strained.

The video timing was different! As I now understand it, a video monitor wants a big input pulse every 1/50th sec to tell it to restart scanning from the top. There is a short delay, (=top margin), before the picture signal, (=text or graphics), which should end before the next "Frame Sync" pulse, giving a bottom margin. The video controller chip was starting after the same (top) delay as Apple video, but going on for much longer. Adjusting a monitor's Vertical Height control seems to squash, (or stretch but not roll), the whole picture; thus pulling the bottom up also pulls the top down, and anyway my monitor would not adjust far enough to squeeze in the bottom two lines... If it had, the normal Apple text and graphics would have been distorted by about 20%. In these circumstances, it is upsetting to be told that there must be a problem in one's monitor!

My phone call to Pace, (now UK distributors), resulted in a #5 EPROM swap to "Modified 6.5A" firmware, which reduces the top margin delay, thus moving the whole 80 column display up by a couple of text lines. Bingo! Pace confirmed the lack of harmony between Vista and their connection, Zofarry. It seems that the relationship with Digitek is rather happier than with Vista. I was told that Zofarry will not release the Firmware source code - even to Pace! The Digitek card is very similar, but not identical: it has the tops-meeting-descenders trouble, but thus keeps the picture size about normal.

It is disappointing that the demo program crashes, while showing an otherwise undocumented machine code utility for fast loading of pre-designed screens, (this should also permit an 80 column screen dump to printer). Even more disappointing that the Font Editor should be undocumented, and crash prone. The "Standard" font, provided on disk as a starting point, is not the same as that installed in the EPROM, which is really quite good - apart from a silly * like a double-decker x, an underline on the line and hash instead of pound sign. Ahead lies the fun of actually getting a 2732 blown, once I have deduced the form of inverse characters and the "Alternate Character Set" - yes, the storage format is undocumented.

Generally, the display quality is pretty damn good, with smooth, clear characters. The penalty for this is that the screen is SLOW, being rather reminiscent of a 9k6 serial dumb terminal. It dosn't seem to slow the computer, but the screen display can lag distractingly behind, for example when scrolling through a spreadsheet or word-wrapping in a wp. The screen has been devoid of the snowstorms seen when processor and video controller simultaneously access screen memory. Old Videoterm cards, (and my old Acorn Atom!), have shown this problem in the circumstances mentioned.

Although the card does an excellent job of extending Applesoft command ranges to suit 80 columns, virtually every program will need converting if you want to run it in 80 column mode (reasons follow) but why bother, if it runs happily in 40 columns? Some snags are: most people use the column 41 carriage return/line feed in their screen formatting and three common CALLs can blitz the program, (-936, clear+home, -958, clear to end of screen and -868, clear to end of line). ASCII Chr$'s are provided to imitate the CALLs, but editing is needed and since these subroutines are among the most popular ones to use from inside a little bit of m/c, this is often impractical. The card is beautifully compatible with GPLE, but it requires DOS 3.3 to be in its standard place, not on the Ramcard. It is happily recognised on booting Pascal and CP/M.

It works perfectly with A.P.P.L.E.'s The Spreadsheet 2, (aka Magicalc). After using an 80 column spreadsheet, a 40 column one feels restrictive.

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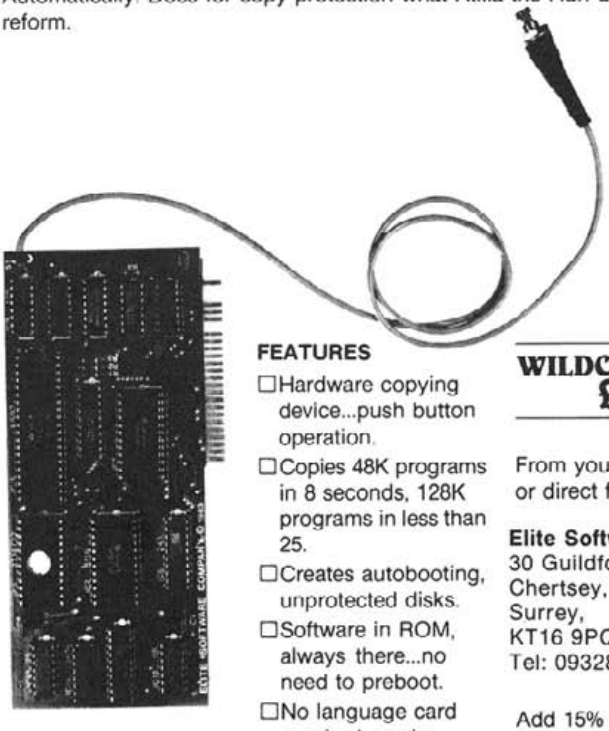

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When "Installing" dBase II, I found it best to ignore the cursor addressing codes documented in the well printed, 86 page, A5, staple-bound manual. But it worked! Incidentally, I preferred to reverse the High-(Inverse), and Low-(Normal) lighting of text for the editing operations.

Wordstar 3.00 only offers the choice of Videx or Sup'R'Term on its (Apple format disk) installation menu. Choosing Videx was almost OK, but although everything else went in the proper place, the Cursor kept in step with the text as entered, but on the top line! Patching in the documented cursor codes collapsed the whole display onto that top line... Thanks to Pace, I now have a copy of the Install program to suit other CP/M machines with remote terminals (Vision-80 seems to think it's a Soroc IQ 120/140), plus a patched CP/M. It works very well indeed, Inverse text being well used, but I do hope that there won't be these problems with each new piece of 80 column software.

The card must be fitted in Slot 3. The Zofarry connects easily to the normal video monitor socket and provides a lead, with similar socket, into which the existing plug is fitted, (thus preventing the possibility of twin monitor working, which the manual describes!). The Vista cards picked up Apple video from the fiddly 4 pin connector near the games port.

A "single wire Shift key mod" is required and provided - for encoder-type keyboards. The Zofarry one is much better than the Vista.

After the card has been activated, it stays in control, even when returning to 40 column working. Thus, the ten, (not twelve, as documented), additional characters may be accessed from the II+'s keyboard even in 40 column mode. These brackets and things are distributed haphazardly; I have resorted to sticky labels on the front of the keys. Some software redistributes them all over again!

One of the great selling points of the card seems to be its Communications ability. I read in the manual that this can be used only from DOS, (not from CP/M or Pascal), and that it facilitates control of a suitable serial card in slot 2. The "A" version is meant to work with the Apple Comms card, or others like the CCS and Digitek which have the same ACIA similarly mapped - Status Register at $C0AE and Data Register at $C0AF. Has anybody actually used it? This is surely the best reason why a //e owner would buy one in preference to one of the versatile auxiliary slot ramcards.

I do appreciate the total lack of intrusion in ordinary 40 column operation, despite the fact that the monitor is hooked up via the card. Screen selection is totally achieved through software. There is no reaching round the back to flip a switch or change cables.

In conclusion, my present feelings are that the Zofarry card is a piece of top quality hardware, rather let down by software sillinesses and incomplete, perhaps inaccurate documentation - putting an unnecessary burden of support on the friendly distributors. The "Modified" firmware ought to be standard. The card should appeal particularly to those using mainly Applesoft and a few pre-defined commercial packages. They will not mind paying for the most legible 80 column display for the II+.

Local Groups

Kent Local Group

We have arranged meetings in Margate, Detling (Maidstone), Folkestone, Tenterden and Canterbury. It is hoped that, by this, we will succeed in bringing out the membership. Those who make the effort will be assured of a pleasant social evening, where nobody is likely to complain of "boring computer-talk"!

Whether you are a "user" or a "hacker", you ought to come along for a chat, maybe even to listen! We hope that the themes for the evenings will produce demonstration and discussion - but are not to be taken as any limitation. Bring programs, problems, or your latest toy, but do come. Isn't swapping experiences what you joined for? All the get-togethers are "from 7 o'clock on".

Thurs 2 Feb - Other operating systems
(CP/M, UCSD and ProDOS?)
[illegible]

Tues 14 Feb - Love a Lady Lisadealer
& any other Business business
Emetco Microsystems, Brockman Road, Folkestone

Thurs 1 Mar - Richard Teed, a one-man show
assembled life and work
Village Hall, Detling (behind the pub!)

Tues 20 Mar - Applesoft Applied. Useful utilities. Why, what & wow!
Millers Arms,Mill Ln,St Radigunds,Canterbury

Later meetings may be revised, there may even be additions...
Contacts: Jim Panks [illegible]
Dougal Hendry [illegible]

****

BASUG South London Section

Meetings are held on the second Thursday of the month in the Methodist Church Hall, on the corner of Worple and Tolverne Roads, Raynes Park. The meetings start at approximately 7.30 pm.

09-Feb-84 Maintenance and Disk problems.
08-Mar-84 Databases.
12-Apr-84 Software protection and A.G.M.
10-May-84 Music.
14-Jun-84 High Resolution Graphics.

Contacts: Michael Leeming [illegible]
Malcolm Skipp [illegible]

****

Birmingham Group

Well, we're off the ground as a user group - 3 meetings so far. The attendance is fairly low but all seem keen to continue. We're meeting monthly and exist as an aid to members needing mutual support now! Meetings start at 8 pm on the second Friday of each month at:

[illegible]

Contact: Mel Golder [illegible]

****

South Hants Group

Dick King would like to start/organise a local group in the South Hants area. Please contact him on [illegible].

The Other Woman

By Cynthia Reidford.

We all know that it is quite common in certain countries for a man to have more than one woman in his home, and this usage of women must, of course, (God forbid), never enter this country. It would therefore come as a surprise to you all that I have been sharing my husband and my life for some considerable time. There have been endless women in my husband's life, some of which I have loathed and others I have tolerated. You know the types I mean, the small cute and insignificant kind that entertain only for a short time and then can only produce a similarly small and cute model even though my poor old Hubbie had spent at least 50 hours on her. Then there are the more sophisticated types who have a little more going for them, in that they need extra attention merely because their wares are more expensive and demand to have radio control installed. I thought I had met my match when a steely eyed monstrosity called 'Miss Lathe' entered all our lives. Now she was something!!! My poor old husband, bless him, endured weeks and months attempting to make her submit to even the most elementary basis for the model engine she had hypnotized him into wanting to create for her. Now she lies in the basement, neglected and forlorn, and it serves her right! To give my husband his due respect, he will occasionally approach her for somewhat mundane services and minor pleasures.

My husband's 'latest' came into our lives three years ago last month - the longest any of them have lasted, and she's still here! She made her first impressions on him by posing in glossy brochures and magazines, all of which surreptitiously found their way onto our coffee table as if by magic, and her image there became more and more frequent - a sure sign that my then 'better half' had 'itchy feet' or whatever....

Well, she moved in with my consent, as I thought perhaps she would cure my husband once and for all of his passion for pickups, but when she arrived, she really wasn't THAT special - just a nondescript squarish form with buttons right across her front, but I could tell immediately that she was the expensive type, as the clue was in her brooch - a tiny unobtrusive colourfully striped apple, and we all know they don't come cheap, don't we?

The first few months she spent with us didn't impress me much at all, as SHE just sat there in her beige attire giving absolutely nothing away - almost as if everything about her had to be a secret. I went out of my way to get on with her, but it was rather obvious that it was my husband's attention that she wanted, and oh my, did she get it! Her first move was demanding a new cassette deck so that she could better entertain my poor besotted husband, and as the months wore on, traumautic to say the least, her influence over him became more and more obvious.

Naturally I commiserated with him, as one would do with any lost soul, but what started to worry me was the fact that he had started to wake up in the middle of the night murmuring apologies to her about crashing her latest program, and all she would or could say to that sort of situation was 'BEEB - Syntax Error' - not very encouraging for him. No, this one wasn't going to divulge her inner self so easily - no one night stands for her, she wanted it all.

My concern for my husband's sanity was naturally growing: he had started to frequent the sort of places where men like himself could talk about their conquests, or the opposite, which is more than likely to be accurate. He even befriended another tortured mind who admitted to having at least five of these devious creatures in his harem, sorry, I mean his attic.

The full horror of what my poor idiot of a husband had taken on was revealed when she started to ask for accessories, and expensive ones at that. She wisely didn't ask for much at first, but once settled in with her feet well and truly under the table, her confidence grew. It turned out that she wanted more sustenance in the form of thin round floppy things, a bit like what I'd imagine a robot's poppadum to be, and not one oven in which to cook them, but two if possible, and six would be very nice thank you. Well poor Hubbie only just managed to scrape up enough to provide her with two, and when she asked for a method of regurgitating all the rubbish she spoke, well I really had to put my foot down, as the vacuum cleaner was on the blink, not to mention the refridgerator and the thread bare nappies AND we haven't had a decent holiday in years! So I just told him that if that was what she wanted, he would just have to go to it and earn more money, and alas, that is exactly what the sucker did. Now Miss 'Smartie Pants' spends considerable time vomiting out endless reams of hieroglyphics, all of which my husband dutifully pretends to understand.

My husband's mental state these days can be somewhat assessed by his inability to utter little more than short sentences, and he has no sense of time whatsoever. His most common utterance is 'In a minute' which is always totally inaccurate. For example, 'Will you have your supper now?' and the answer: 'In a minute' or 'WHEN ARE you coming to bed then?' and we all can guess the answer! Only on one or two occasions have I lost my cool and screeched in frustrated rage that if he didn't come to bed in five minutes, then he could use the guest room and take her with him!

This communication problem between us has been somewhat hampered by her cajoling him into learning all the languages SHE speaks, so that THEY can get along better, so there he sits, night after night, staring round shouldered into her square visage with mindboggling agony oozing out of every pore in an attempt to accommodate her. He even tries to titillate her by allowing her to talk to others of her kind and to read their newspaper bulletins, but the more of them he finds, and the longer she has access to them, the more massive our telephone bill and the quicker my pulse.

It is all to no avail, as there are none so blind as those who will not see, and he can't comprehend that she isn't just the physical type: constant attention isn't enough, and he does keep her immaculately groomed, and more recently, cool, by means of yet another contraption she wanted. Her evil ways have so infiltrated his mind that he is nowadays virtually a slave to her, totally without self-respect and can be heard expounding her virtues to any fool who will listen like some sort of demented lay preacher.

Well, I for one will continue to keep my distance, and if you see an initial flicker of interest in your beloved's eye then you can't say you haven't been warned of the consequences of allowing her sort into your home. After all, you don't want your husband to be constantly tired, depressed and irritable just because she isn't giving him what he wants, now do you?

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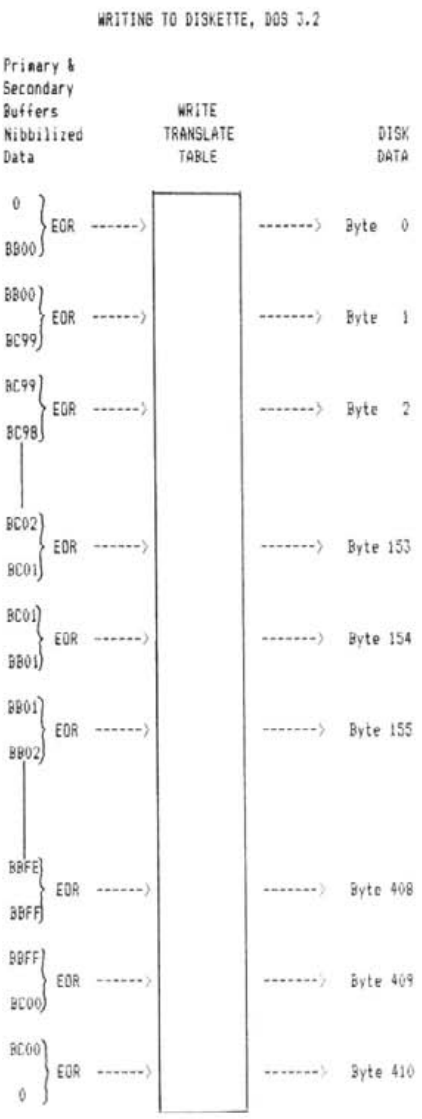
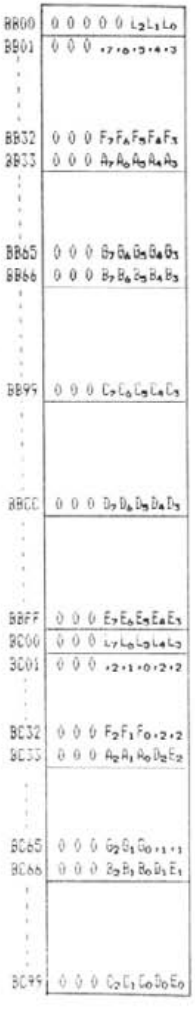


Setting a record straight.

By Ray Harris.

Like many other Apple users, I am most grateful to Don Worth and Pieter Lechner for their 'Beneath Apple DOS'. There is a lot of useful information in it, and almost all is accurate. Recently, while trying to dissect a disk in DOS 3.2 (still used by a few, especially with protected software!), I came across a small inaccuracy, or perhaps just a vagueness, that took me some time to sort out and seems worth putting in writing.

Concerning "5 and 3" pre-nibbilizing (page 3-16) we are told that out of the 410 bytes required for one sector two bits are not used. Which two? Diagram 3.18 also contains portions of different lengths (most are $33 bytes long, but $BB00 to $BB33 and $BBCD to #BC00 are both $34 bytes). Which are the odd bytes? If the 256 byte buffer is nibbilized in lots of 5 at a time, which is the single byte that gets left by itself? I also needed the DOS 3.2 equivalent of figure 3.20 on page 3-18. By trying a few home-written sectors, I managed to produce the following diagrams which set the record straight.



Videx Enhancer

A REVIEW OF THE VIDEX ENHANCER II

by Peter Blair

The Enhancer II is a combined hardware, firmware and software package to provide lower case display and a fully operational shift key among other things. The unit arrives in a cardboard sleeve containing a manual, utilities diskette (DOS 3.3) and a foam packing containing the circuit board and a lower case display chip. As designed the unit is intended for Apples of revision 7 and above, but may be used on any with a piggyback keyboard encoder. In these cases the lower case chip cannot be used.

The manual contains all the instructions for installation laid out in sections. Each section should be read through completely then followed carefully step by step. The result is extremely easy installation requiring no specialist electronics knowledge. The first step is to separate the Apple case halves, followed by installation of the lower case chip (on Rev 7 Apples only). The Apple is then partly reconnected for testing the chip. If all is well everything is disconnected again and the existing encoder board removed. The new encoder board simply plugs in in its place. Two wires are all that remains of installation - these were supplied with the kit with the ends already stripped of insulation, and are fitted in position by carefully removing the IC in the socket indicated, inserting the wire and replacing the IC. While it is not essential to install either of these wires the manual recommends installation of both to give full use of all the features available in the unit. To complete installation a series of tests are performed and a trouble shooting chapter should sort out most problems. If the unit still fails to work then I think it more prudent to contact your supplier than to contact Videx directly as recommended in the manual, since an American company is often difficult and expensive to deal with.

Having completed installation and checkout, the result is indeed excellent. To begin with the keyboard operates as normal Apple, but pressing SHIFT and RESET together switches to upper/lower case. The lower case set has proper descenders and is very comfortable to read. A type ahead buffer is also available, allowing up to 128 characters to be typed while the Apple is away reading a disk file or something. Unfortunately these cannot be seen until the Apple finishes reading the disk or whatever but at least this facility eliminates the annoying syntax errors caused by trying to type a command too early.

Another excellent feature is the auto repeat on all keys which makes even Applewriter I easy to use. If required, pressing the repeat key will produce fast repeat (at about 50 characters a second). Last is the feature I think most useful, the Macro definitions. These allow a single keypress to produce a complete command or sequence of commands or any sequence of keyboard characters. They may be defined directly from the keyboard or using a Macro editor provided on the utilities diskette. A space of 512 bytes is reserved for these definitions in memory on the encoder board. They may be saved in disk files and downloaded into the encoder when required providing you have installed the automatic download wire. I have defined a set of Macros which produce the most used BASIC and DOS keywords resulting in a great reduction in typing when programming. Using the macro editor also allows you to control the features of the Enhancer. The keyboard may have the type ahead buffer disabled (essential for playing games) and may even be locked into the original Apple keyboard mode for use with software that does not operate properly otherwise.

Most of the manual is formed by a series of appendices describing the software on the diskette and listing the firmware program of the enhancer (this cannot be directly examined with the monitor since it does not occupy any address space in the Apple). The section on getting lower case to work with Basic is very useful.

Finally, the diskette of software. The first thing to do with this is boot it. It must not be write-protected during this first boot as the HELLO program modifies the diskette to boot up in the correct mode on subsequent boots. Follow the on-screen instructions and all will be well. Once this is done a copy may be made using COPYA as the disk is unprotected, and this is recommended. A note for PASCAL users here, the back of the disk apparently has PASCAL versions of the software but I could not verify this, not having PASCAL myself. Of all the programs on the diskette, the Macro editor is most useful and the most used in my system. The Applewriter modifier program did not work with my original of Applewriter I producing strange effects and locking up. However any version of Applewriter already

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- It supports all Applesoft commands including the text Window ie Home, Text, GR, HGR, HGR 2, Tab etc. It has inverse and normal display ie Highlight and Lowlight in CP/M and Pascal.
- It is possible to change the cursor character to either a block cursor or an underscore cursor. The speed of cursor blink can be altered and it is also possible to re-define the character set with your own personalised font.
- The card comes complete with demonstration/utilities disc and is simple to install. It also includes a comprehensive users manual.
- For use with Apple II+, IIe. Supports DOS, Pascal and CP/M Software.

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modified for lower case should work perfectly - my own does.

"Well, is it value for money?" we all ask. It is certainly expensive for the components involved, suffering from the $1 = £1 exchange rate syndrome of computer peripherals crossing the Atlantic. That said however, I have never regretted buying it and the feeling of release from Apple's old keyboard is marvellous. At the current price it is worthwhile, if it were £20 cheaper it would be a bargain.

Software Library

Roger Mather.

I have been enjoying the games on disk no.73 but find a problem or two with 'Will of the Wisp'. Line 805 should be 8015, otherwise you can't drop anything! Lines 12040 and 12055 are too long and have bits chopped off; they need splitting up. The correct endings are obvious.

I found the game very long and so have added a 'Save Game' possibility. The lines are:

```
40 HOME:D$=CHR$(4)
50 PRINT"WANT TO RESTORE OLD GAME?"
60 INPUT A$:IF LEFT$(A$,1)="Y" THEN
   GOSUB 18000:TRUE = 1:FALSE = 0:
   GOTO 120
5200 IF VE$="SAVE" THEN GOSUB 17000:
   PRINT "SAVED":RETURN
17000 REM SAVE GAME
17020 PRINT D$;"OPEN SAVER"
17030 PRINT D$;"WRITE SAVER"
17040 FOR J = 1 TO 10:PRINT FLG%(J):
   PRINT ITM%(J):PRINT ITM$(J):
   PRINTEX$(J):NEXT
17050 PRINT PS
17060 PRINT D$;"CLOSE SAVER"
17070 RETURN
18000 REM LOAD GAME
18010 PRINT D$;"OPEN SAVER"
18020 PRINT D$;"READ SAVER"
18030 FOR J = 1 TO 10:INPUT FLG%(J):
   INPUT ITM%(J):INPUT ITM$(J):
   INPUT EX$(J):NEXT
18040 INPUT PS
18050 PRINT D$;"CLOSE SAVER"
18060 RETURN
```

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Offers to Peter Davies [illegible]

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Apple][Keyboard Encoder Board £12.50
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For sale at any reasonable offer around the £50 mark - old Teletype 33 Serial link (RS-232) printer and stand if required. Only prints in upper case and hence unsuitable for wordprocessing, but adequate for all normal listing and output purposes. Operates with Apple][at speed of 300 baud. Apple Serial interface card also available if required.

Program Line Editor - Superb editing program by Synergistic. Program and original 28 page manual - £12.

Contact: Malcolm J. Skipp at [illegible] (evenings) for demonstration.

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The above items available from:-

Peter Smith
[illegible]

Peeks, Pokes & Calls

Compiled by Dick Menhinick

```
POKE 28,n       - changes colour mask byte to n
POKE 32,L       - set left screen margin to L
POKE 33,W       - set screen width to W
POKE 34,T       - set top margin of screen to T
POKE 35,B       - set bottom margin of screen to B
POKE 33,33      - removes unnecessary spaces from listed lines (for editing)
POKE 36,n       - tab n spaces (allows greater range than TAB)
POKE 50,128     - makes LIST and CATALOG invisible!
POKE 214,215    - makes program RUN for any direct command
POKE 1012,0     - causes REBOOT on RESET
POKE 2049,1     - makes first line of program LIST repeatedly
POKE 40514,52   - allows a binary greetings program
POKE -16368,0   - clears keyboard strobe
POKE -16297,0   - switch graphics page = current text page
POKE -16298,0   - switch text page = current graphics page
POKE -16299,0   - switch from page 1 to page 2
POKE -16300,0   - switch from page 2 to page 1
POKE -16301,0   - switch from full screen graphics to mixed text and graphics
POKE -16302,0   - switch from mixed text and graphics to full screen graphics
POKE -16303,0   - switch display from graphics to all text
POKE -16304,0   - switch display from all text to graphics

PEEK (37)       - read cursor's vertical position
PEEK (36)       - read cursor's horizontal position
PEEK (49374)    - stops disk motor
PEEK (49375)    - starts disk motor
PEEK (49376)    - select disk drive 1
PEEK (49377)    - select disk drive 2
PEEK (-16384)   - read keyboard (byte read into variable assigned to PEEK)

CALL -1169      - sets correct 'funny complement' after POKEing reset vector at 1010 and 1011
CALL -868       - clear current line from cursor to right margin
CALL -936       - clear screen (same as HOME)
CALL -1184      - clear screen and print Apple logo
CALL -384       - INVERSE
CALL -380       - NORMAL
CALL -1036      - move cursor one space right
CALL -1008      - move cursor one space left
CALL -922       - move the cursor down one line, linefeed
CALL -998       - move the cursor one space up
CALL -7036      - force garbage collection
CALL 1002       - re-connect DOS after a crash!
CALL 62450      - clear the current high res screen
CALL 62454      - fills hi-res page with current colour mask byte

POKE 1010,102 : POKE 1011,213 : POKE 1012,112 - makes RESET = RUN
POKE 1010,0   : POKE 1011,224 : CALL -1169    - clear memory upon RESET!
POKE 1010,0   : POKE 1011,3   : CALL -1169    - makes RESET jump to $300 (768)
POKE 1010,105 : POKE 1011,255 : CALL -1169    - makes RESET jump into monitor

POKE 1014,165  : POKE 1015,214  - makes & = LIST
POKE 44505,234 : POKE 44506,234 - makes DELETEd files in catalog visible
POKE 44452,24  : POKE 44605,23  - allow 20 names to be listed before catalog pauses
POKE 44599,234 : POKE 44600,234 - stop CATALOG at each filename and wait for any keypress
POKE 44596,234 : POKE 44597,234 - cancel CATALOG pause when screen is full
```

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CIA

REVIEW OF THE C.I.A. DISK UTILITIES

by John Rodger.

Introduction.

The C.I.A. is one of many disk editor utilities currently available for the Apple, however this one has many original features. It has been written in the U.K. and so is cheaper here than in the States. The package is marketed by Golden Delicious Software Ltd. and comes with a completely accessible disk and a 60000+ word user guide which is spirally bound A5.

Description of the modules provided.

The package consists of five utilities which can be easily loaded from a menu:-

1. TRICKY DICK
2. THE LINGUIST
3. THE TRACER
4. THE CODE BREAKER
5. THE TRACKER

TRICKY DICK is treated as an executive program which is normally co-resident in memory with one of the other modules. Switching between current modules is very easy (I thought too easy) to achieve by typing cntrls E or C. The first Menu gives you a choice of the various combinations to be loaded, however the manual seems to have been written before this menu was added as it tells you to bload the modules in turn (which you can also do).

1. TRICKY DICK is a disk sector reader/writer and displayer. The display can be in HEX, ASCII, DISSASSEMBLED, or LISTED in BASIC as appropriate. The track, sector, disk version, I/O slots, etc. are selected by the cursor on a Menu page and there is a help page to remind you of the many single key codes which do this. I appreciated the printer option as it worked perfectly with my Epson FX80 and Digitek interface with no special routines to create and load.

The main difference between this program and others is that it allows you to modify the special characters that the various DOS versions use to identify sectors. These are called the address and data headers and trailers and are nearly always altered on copy protected disks as an initial step in preventing the user from examining or altering the disk. The part of DOS that calculates a checksum can also be inhibited from the menu. This technique demonstrates how the experts can modify their own versions of DOS but it is useful to be able to do it from a menu. The part of DOS that does the reading and writing is called the RWTS and in fact this program uses several separate RWTS routines, leaving the main DOS RWTS unaltered, which means you can read from one non standard format, write to another, and exit with normal DOS.

For standard disks there is a tutorial which takes you through various exercises in repairing clobbered disks and patching DOS directly on the disk to add various enhancements. For non standard headers (copy protected or damaged) we are given some initial suggestions to try but if these fail, this is the time to call on the LINGUIST.

2. The LINGUIST is a module which dumps out a RAW track of nibbles from the disk in the several types of encoding methods (5+3, 6+2, 4+4 mode for the initiated). Any track including half tracks and supposedly impossible ones can be selected. The cursor can be moved around the display of the dump as in Nibble Copy programs.

Here this program is different in that wherever the cursor is, there is always a display of a few bytes on a status line on the bottom row. If you think the cursor is currently sitting at the end of an address header, these bytes will translate this header and give you volume, track, and sector number as well as checksum. I found this feature particularly useful in locating logical sectors in the raw display.

Now for the really interesting bit! If you ask the LINGUIST to translate the data in this sector into meaningful code using Cntrl T you can pop back to TRICKY DICK (after noting the header values) and view the translated code. Now if you change the header marks you can usually read subsequent sectors using direct sector access rather than track dump. If you are interested in locating something specific on the disk you can now call on the help of the TRACER which has to be loaded in place of the LINGUIST.

3. THE TRACER enables you to scan a range of tracks and sectors with five different search options:-

Verify formatting as selected.
Locate Track and Sector Lists for programs.
Locate Catalog sectors.
Locate VTOC.
Locate STRINGS (up to 6 at once and HI/LO ASCII or even HEX groups including wild cards anywhere in the groups).

The fairly rapid disk scan will stop when an occurrence of a requested string is found and control is then passed back to TRICKY DICK with the cursor sitting on the string. You can now edit and write back to the disk. Cntrl E takes you back to the TRACER but the program recognises that a search is still in progress and continues further. The search can be aborted. This quick scanning could be used as an information retrieval system to locate all wordprocessing files which contain a reference to a certain company or subject and would be faster than using the wordprocessor and editor (if you're good at relating track sector lists to filenames).

4. THE CODE BREAKER is the module you will need if you are still unable to make sense of the translated code. This might be due to another way of protecting disks which involves changing a lookup table which RWTS uses to translate the nibbles on the disk. This might be tricky for the novice but the manual describes it well and the software is easy to use if you know which bytes to change. The manual gives you enough information to protect your own disks in an unusual encoded form making it difficult for information to be interpreted even if readable and gives an insight into some of the more recent copyproof techniques.

5. THE TRACKER displays the position of the disk arm as it moves from track to track and leaves on the screen a list of every track and sector visited as well as every READ and WRITE operation carried out. This program is useful for looking at the way DOS accesses a disk from an educational viewpoint and can also reveal exactly where a problem during a disk access is occurring. However I found that the majority of my programs disconnected this routine which relies on the I/O hooks not being modified. These were often standard programs running under standard DOS. If you really want to monitor these operations then I think you will need one of the hardware monitoring solutions currrently available.

Bad Points.

These are really little niggles as follows:-

The manual needed better printing (Underline crosses descenders and part of the letters impairing legibility).

Cntrl E to call another module is next to Cntrl R to read a sector. I often hit the wrong one while examining a range of sectors (ESC might have been a better choice).

There seemed to be no quick way to move the cursor to start of sector in TRICKY DICK although there was in the LINGUIST buffer.

The arm always recalibrated to track 0 on swapping from TRICKY DICK to LINGUIST but there is a patch described in the manual to eliminate this. I would prefer the default to be the other way round.

The location of the RWTS entry point within TRICKY DICK is incorrect for both 3.3 and 3.2 in the manual. I located these nearby and this allowed me to use my own utilities as well as those provided.

Tricky Dick seemed unable to access a disk where track, sector, volume and checksum numbers had been transposed. It would be tedious to use the LINGUIST nibble dump/ translate for every sector on a disk. Perhaps I did not read the manual carefully enough.

No reinforced centre on the disk supplied can cause slipping on older disk drives.

Finally the manual rightly tells you that tailoring and modification of defaults on your valuable protected disks should always be done on copies but this assumes you can copy them (This suite however will help you to specify parameters in your copy program).

Good Points.

I liked the extra protection against an accidental write which bleeped for a short period in which you had to confirm.

The HELP option from the menu.

The interaction between the modules.

The ease of access to the modules as a result of being unprotected.

The comprehensive and informative manual.

The tutorials and the specially formatted track.

Conclusion.

Although this package requires much more practice and use on my part to obtain maximum benefit, I feel that it would be an excellent introduction to any disk user's armoury of utilities whether he is a novice or an experienced hand.

****

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Specify ENCODING 6 & 2, 5 & 3, 4 & 4,

TRICKY DICK THE LINGUIST BY T TSE
D596AA Y AADE DOS SL=6 T=23 <00> VOL
D6ABAE N 0000 3.3 DR=1 S=0F <→> 254
D5AAAD 0 DEAAEB PR=0 <AL> <62> <H>

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Readers' Letters

Aurora, Illinois, U.S.A.

Gentlemen:

I am an american fan of microcomputing. I have a problem and upon hearing of your organization I thought that you might be able to assist me, if you would be so kind.

In reading some of the British magazines pertaining to other hobbies I have always appreciated the thorough manner with which each facet was dealt. Now that I am involved with microcomputers, which I read also has a large following in Great Britain, I would like to read what your hobbyists are doing and what is being made for both recreational and small business usage.

If anyone in your club is interested, I would send four of our current microcomputer magazines in exchange for four of your current ones (four different publications).

My equipment is:

Apple II+ 48k memory
2 x 5.25" Apple Disk Drives
13" black & white Amdek Monitor
Apple Dot Matrix Printer
Hayes Micro Modem II

I am a 52 year old production foreman in a plant where electronic data sets are manufactured.

I would be greatly appreciative of any help you may be able to provide.

Thank you.

Wesley R. Fortman.

Address: [redacted]

London NW8.

Dear Sir

Applewriter //e & Centronics 737

I recently acquired Applewriter //e and much appreciate its many sophisticated new features. I was astonished, however, to find that its output was limited to 80-columns width and that the Centronics control characters do not operate to produce proportional and condensed characters on the 737 printer. Can any of your other readers suggest how these shortcomings can be overcome?

Also, is there an easy way of making old Applewriter produce the correct characters on the //e? (Except by typing them as Esc characters, of course).

Yours faithfully,

Gerard Noel.

March, Cambridgeshire.

Dear Sir,

A tip that I discovered whilst waiting for more disks was to use both sides of the disk.

I noticed, whilst wondering which programs to delete, that both sides of the disk appeared to be covered in the same magnetic material and, as the disks are soft sectored, it did not matter which position the centre hole would be in. So I took the disk and using a scalpel, cut a notch out of the other side of the disk being careful not to damage the inner surface.

To test the disk it was initialised in the usual manner and then a copy of the BASUG introductory disk made. Upon running, everything seems to be in order.

Although I would not recommend doing the above to all disks and presuming both sides of the disk are the same, I can see no reason why both sides should not be used. Anyone know differently?

Yours faithfully,

Phil King.

Oxford.

Dear BASUG,

Apple /// & Epson 100/III.

Can you help? As a new dumb (?) user of computers I cannot seem to understand how I get the Applewriter /// to:

1. Underline - despite using <backslash> Text <backslash> symbol, or

2. Produce Expanded or Contracted type. See Epson manual p.45 for code

so I am going mad.

Stan Harding.

South Chailey, Sussex.

Dear Sir,

Sometimes I read Hardcore and can find nothing of special interest. Last month (October) was exceptionally good, but some articles seem to require comment.

Why, I wonder, does Margaret Wood find it necessary to "release the 40 column chains" when using a word processor? I have only ever found this restriction and the need for Cntrll-80-N to apply to BASIC listings. Like Margaret Wood I use Applewriter and a Centronics 737. I also have a Centronics 739, an Anadex and an Epson MX100 available, so I use the "Glossary" function (Centglos, Anaglos, Epglos) to provide the controls required with the same "keys" used for similar functions on each printer.

I used Applewriter I initially, and since I did not know of Ian Trackman's "Go-Between" I wrote my own justifying Printer for Applewriter I to Centronics 737. I am in the process of modifying it for Applewriter II but as users will know AW II is protected, and although I have cracked the protection for my own purposes it would be unethical to copy it. Since AW II produces normal text files however it is only a matter of producing a formatting printer routine which recognises all the built in commands of AW II and interprets them appropriately for the Centronics 737.

Dave Miller has one or two errors in his letter:

"for Apples: OFFSET=280 DIV 7" should be "for Apples: OFFSET=X DIV 7 where X is 0 to 280"

similarly
BITNUM = X MOD 7 where X is 0 to 280
"for ITT OFFSET = X DIV 9 etc.

(280 MOD 7 is always 0 of course and 280 DIV 7 is always 40!)

The HGR Screen layout is not totally illogical as suggested on page 40, it makes the Low-res colours easier. The "wasted" bits are not two bytes per row, but rather 8 bytes in every 128. The screen spreads across 128 bytes with the top third of the screen using the first 40, the next third of the screen the following 40 and the bottom third of the screen the next 40, three 40s make 120, leaving 8 spare bytes. Each third of the screen has 8 characters and each character has 8 rows of dots.

Further down page 40 D. Miller uses the monitor routine at $F458 in the ITT or $F411 in the Apple to determine the left-hand base screen address then suggests a further routine to calculate the bit address. The routine at $F458 already calculates the bit and byte addresses and sets Y to the byte address and $30 to the bit mask pattern so no further routine is required. The ITT uses rather a convention that the "carry" is the ninth bit, and following this a better routine for setting the ninth bit is pointed to by ITT's own software...

```
BIT $C05E       ;ENABLE 9TH BIT LATCH
SEC             ;WILL ACT AS NINTH BIT
LDA (HPTR),Y    ;GET EXISTING GRAPHICS
                ;BYTE
ROR             ;CARRY INTO BIT 8
STA (HPTR),Y    ;PUT AWAY
ROL             ;ORIGINAL BYTE BACK
BIT $C05F       ;CLOSE NINTH BIT LATCH
STA (HPTR),Y    ;PUT AWAY
```

Mr. G. L. Taylor seems to require mixed text and graphics as a way of labelling graph axes. This is OK with hgr1 but hgr2 requires a poke to get mixed text and graphics. Even then the text screen involved is text2 and this is not easy to write to. Even if a way is found, (and I write to text1 and use a copy subroutine to transfer this to text2) the text2 screen is at $800 to $C00, which conflicts with the start of any normally loaded Basic program. So the program has to be loaded further up the memory. All in all the best way to label graphs is to use a special routine such as the good one called "Texongraph" on BASUG disk 21.

Yours sincerely,

D. J. Bullar.

Bishops Stortford.

Can anyone help me? I have a problem getting the full character set with Pascal and the ALS Smarterm. I'd appreciate a call on [illegible].

Rick Hutley.

Shefford.

Can anyone tell us of an INPUT routine for the Apple //e 80-column card? This is the most frequent question on the BASUG Hotline and nobody seems to know the answer.

Martin Rogers.

P.S. New volunteers for the Hotline are always welcome.

Sunbury on Thames, Middlesex.

Dear Editress,

The December letter from Norah Arnold calls for a response from me.

For the record, your opposite number at 'Windfall' edited out the last line of my original letter about "bypass" routines, which read: "No doubt a survey of the mechanisms used by all commonly used cards would be appreciated by someone somewhere, if this could be arranged." Instead, he quite properly used his limited space to let Mike Glover set out the proposed arrangements - full marks to Mr. Glover. I omitted the same sentence from the version I sent to you, since that was for information only. I am suitably chastened to realise that, with this one sentence omitted, the letters managed to imply the opposite of what I had actually said.

The firmware on the Apple Parallel Printer Card, which is the only card for which I have a listing , occupies 249 bytes and is completely ignored by the bypass routine - bypassed, in fact! As I said, the character to be transmitted is stored in $C090 while the printer "busy" signal is checked in $C1C1. $C090 is not on the card at all - it is one of the 16 locations on the Apple main board allocated for use by the peripheral in slot 1 (Apple II reference manual, chapter 5). $C1C1 is on the card (ibid) and the firmware certainly includes a routine for its own purposes for checking it to see when the printer is busy but the Glover/Roper routine incorporates its own code for doing this. As far as I know, actual transmission of any character in $C090 is effected automatically by the hardware as soon as the printer is ready, independently of any program.

I hope (subject to correction from the many people who must know more about it than I do) the above explains how I could say that the actual firmware on different cards is "irrelevant". On reflection it was probably too sweeping, but no more so than N Arnold's assertion that 'the "bypass routine" itself needs to be very slightly different for almost every card'. This surely begs the very questions that Mike Glover is so nobly trying to answer - we already know that two routines cover at least four cards, and that is counting Apple/ITT as one!

The question of whether characters go "directly" to the printer and/or "through" the card (both Messrs Glover and Roper's own words) is a red herring I wish I'd left severely alone! "It all goes to show how very hard it is to write..." (Arnold, N. Hardcore vol.3 no.6 Dec. '82, Education).

Yours sincerely,

R Teale.

Bexley, Kent.

Dear Editor,

I would like to make the following comments in reply to Jennifer Gamston's letter in December's Hardcore.

Many assemblers assume that commands such as ASL apply to the accumulator if no operand (address) is specified. The DOS Toolkit Assembler is an exception and ASL will not be accepted, but ASL A will (likewise for LSR, ROL & ROR).

The opcodes for LDA(IND,X) and STA(IND,X) are A1 and 81 respectively. I tried these on my Toolkit Assembler (version 1.0) and they appear to work correctly.

I hope that this infomation is of help.

Yours faithfully,

Steven J. Brown.

Finchley, London N3.

Dear Yvette,

I read with interest Jennifer Gamston's letter about her trouble with the Toolkit assembler. I think I can solve her problems.

The opcodes: ASL, ROL, LSR, and ROR are used on the Applesoft mini-assembler. The Toolkit assembler, though, uses the standard 6500 series processor mnemonics as published by

Synertek. The Synertek versions of the above opcodes are: ASLA, ROLA, LSRA and RORA. The reason for the extra 'A' stems from the fact that the 6500 series (of which the 6502 is only one member) owes much in its development to the 6800 series. The 6800 has two accumulators: 'A' andd 'B' so each accumulator has to be explicitly referenced in all accumulator addressing opcodes. It seems that when the 6500's mnemonics were drawn up it was thought necessary to keep this explicit reference to the accumulator in these four opcodes.

The fault in the assembler's coding of the indexed indirect (by X) load and save of the accumulator is very strange. I have never had this problem with any of my programs but after some experimentation I managed to draw up the following rules to avoid this occurring:

If labels are not used:

LDA (0,X) will be incorrectly coded
LDA ($0,X) will be correctly coded

so if literal addresses are used then they must be in hex to be correctly coded.

If labels are used:

LDA (L,X) will be incorrectly coded
LDA (LB,X) will be incorrectly coded (sometimes)
LDA (LBL,X) will be correctly coded

so if label addresses are used then they must be at least three characters long to ensure the correct coding of the instruction. Since the assembler converts decimal values into hex before assigning them to labels both decimal and hex equates will be OK:

```
LBL EQU 255
LBL EQU $FF
```

I was also interested with Jim Steedman's problem. I might have a possible solution. It is to alter the printer's line spacing to 9/216" by issuing the following command before attempting the print:

```
PRINT CHR$(27); "3"; CHR$(9);
```

I hope that this might be of some help.
Yours sincerely,

Dave Miller.

Tring, Herts.

Dear Sirs,

I am having a problem with the Z80 Softcard. Due to slow fill of the disk buffer the drive stops and starts continually which can't do it any good. Some systems have a byte controlling the disk drive delay but I can find no trace of one on this system. Can anyone suggest a solution? This is not a general problem but specific to some programs which inherently are slow at filling and emptying the buffer. No program changes appear practical.

Yours faithfully,

R. G. Silson

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DIARY

February

2nd	Kent Group - Monks Meadow Oast, Appledore Road, Tenterden. Other Operating Systems (CP/M, UCSD + ProDOS?). 7pm.
7th	Herts Group - Robo 1000 Bitstik Graphics Demonstration
9th	South London Group - Maintenance and disk problems 7.30
10th	Birmingham Group 8pm
12th	Hants and Berks Group
13th	East Kent Group
14th	Kent Group - Emetco Microsystems, Brockman Road, Folkestone. Love a Lady Lisadealer & any other Business business. 7pm.
16th	BCS - Computing in the Houses of Parliament, Richard Morgan. Charing Cross Hotel, The Strand, WC2 - 6 for 6.30pm.
19th	Croydon Group - Graphics using e.g. Bitstick 7 pm
25th	BASUG National Meeting - Beginners Day & Workshop Woughton Campus, Woughton, Central Milton Keynes.
24th-26th	Joint weekend with TRS-80 Group. Build a Maplin Modem. Woughton Campus, Woughton, Central Milton Keynes (see update)

March

1st	Kent Group - Village Hall, Detling. (Behind the Pub!) Richard Teed. One-man Show, assembled life and work. 7pm
6th	Herts Group - Hard Disks
8th	South London Group - Databases 7.30
9th	Birmingham Group 8pm
10th	BASUG National Meeting - Hatfield Polytechnic. 10am - 5pm Apple coming to demonstrate new products. Cost £2.
15th	BCS - London. See Press for details.
20th	Kent Group - Millers Arms, Mill Ln, St Radigunds, Canterbury. Applesoft Applied. Useful Utilities. Why what and wow! 7pm
23rd	BCS London Seminar - How to select Microsystems. £25 for BCS members (£35 non-members). Afternoon. Contact: Philip Virgo, NCC, 11 New Fetter Lane, EC4.
25-28th	Apple Village - Basildon, Essex

April

3rd	Herts Group
12th	South London Group - Software Protection and A.G.M. 7.30
	BCS - Confessions of a Software Publisher, David Tebbit. Charing Cross Hotel, The Strand, WC2 - 6 for 6.30pm.
13th	Birmingham Group 8pm
14th	BASUG National Meeting - Nottingham area.
19th,21st,23rd 5th	London Computer Fair, Central Hall, Westminster, SW1

May

10th	South London Group - Music 7.30
12th	BASUG National Meeting - Reading.
17th	BCS - AGM and the Role of the BCS over the next 10 years. BCS HQ, 13 Mansfield Street, London W1.

June

14th	South London Group - High Resolution Graphics 7.30
9th	BASUG National Meeting - North West.

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